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# DISEASES OF WOMEN:

A MANUAL OF

## GYNECOLOGY

DESIGNED ESPECIALLY FOR THE USE OF

STUDENTS AND GENERAL PRACTITIONERS.

BY

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THIRD EDITION, REVISED AND ENLARGED.

WITH 156 ILLUSTRATIONS.



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Walter R Brinkerhoff.  
Harvard Medical School.

TO

WILLIAM H. BAKER, M. D.,

TO WHOSE SKILL AS A TEACHER, TO WHOSE EXAMPLE  
AS A PHYSICIAN, AND TO WHOSE UNVARYING  
KINDNESS AS A FRIEND, THE AUTHOR  
OWES SO MUCH,

THIS BOOK

IS AFFECTIONATELY DEDICATED.



## PREFACE TO THE THIRD EDITION.

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IN this edition I have decided to enlarge somewhat the scope of the book. It has seemed wise to include surgical as well as non-surgical methods of treatment. At the same time I have not departed from my aim in writing the book originally, to make it a manual for students and practitioners. It is not intended for specialists, nor have I aimed to make it a complete résumé of the whole field of gynecology. As before, pathology has been largely omitted, rare affections have not been included, and treatment has been restricted to measures which I have found of practical value.

It is my hope that in its new and enlarged form it will find an increasingly useful place in the medical literature of the day.

F. H. D.

419 BOYLSTON ST., BOSTON, August, 1898.





## PREFACE TO FIRST EDITION.

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WITH the present multiplicity of gynecological treatises and text-books, it may well be questioned what useful purpose a new one can serve. It has, however, seemed to me that there is no book which exactly fills the gap which this one is intended to. It has two main objects: in the first place, to give the student clearly, but with considerable detail, the elementary principles of the methods of examination, and the simple forms of treatment of the most common diseases of the pelvic organs; and, in the second place, to help the busy general practitioner to understand and treat the gynecological cases which he meets with in the course of his everyday practice.

These two objects have defined the scope of the work. For the sake of brevity, and to avoid confusion, the treatment has been mainly confined to such measures as have been practically found of the greatest benefit in the author's hands. Pathological anatomy has been left out, and diagnosis and treatment have received the most attention.

It is hoped that the student will find the book of value as collateral reading. It is not intended to be used as a text-book, as its scope is too limited; but special attention has been paid to the description and elucidation of many minor, though important, points which are ordinarily omitted in text-books, but which

the student will find of great value in beginning practice. The book aims to be a practical one, and questions which are still matters largely of theory have not been considered.

I desire to express my thanks to Dr. H. P. Quincy, for his assistance in the preparation of the original drawings ; also, to Dr. R. A. Kingman, for taking several photographs.

5 PARK SQUARE, BOSTON, June, 1889.

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# DISEASES OF WOMEN.

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## CHAPTER I.

### INTRODUCTORY PRINCIPLES.

THE treatment of diseases peculiar to women, more than is the case with some other specialties—for example, those of the diseases of the eye and of the ear—is common property of the profession. This arises from several causes. In the first place, its specialization is a matter of comparatively recent date. The immense strides in this department, especially as regards operative treatment, have all been made within a generation, and the majority of physicians, particularly of those graduating more than fifteen years ago, and whose field of practice has lain outside the large cities, have been and still are in the habit of treating all gynecological cases which come to them in the course of their regular practice.

In the second place, the patients themselves naturally consult their family physician for this class of troubles. The medical attendant who has been with them in their confinements, who has brought their children through severe illnesses, and who has acquired the confidence which is the result of long years of intimate relationship, is the one to whom they

naturally turn. There is also, from the very nature of the troubles themselves, with most patients, a reluctance to discussing them with a stranger.

Again, the public have demanded in this class of affections less thorough and scientific treatment than is the case with other specialties. Naturally modesty leads a woman to relinquish treatment as soon as she can possibly persuade herself that she is well enough to go without it. The results of treatment are less apparent than with diseases of the eye, or the ear, or the skin, for example, where the patient can judge very accurately of the benefit received.

Many women, perhaps most, look upon more or less troubles with the sexual organs as natural, and to be borne in silence. A large proportion of women never menstruate without pain, which they learn to endure without complaint in the years of young womanhood preceding marriage. Childbearing brings its own special discomforts and ailments, which persist until the establishment of the menopause makes the woman feel that she is through with her active sexual life and is too old to be patched up. Thus many a woman suffers through life; her family physician, in many instances, encouraging her to believe that her troubles are only those natural to her sex with its peculiar functions.

This state of affairs has changed very much within the last few years, and will change still more. More time is devoted to teaching this branch in the medical schools, and women are learning from their physicians and from each other that suffering and pain are

not their unavoidable lot, but that modern science and thought have devised means of helping them if they will avail themselves of them.

Hence, more is demanded of the physician to-day than twenty-five years ago. It is expected that the general practitioner shall be very thoroughly conversant with the diagnosis and treatment of a large part of the diseases which are included under the name gynecology.

If the case proves to be one out of the usual course, obscure or requiring special operative treatment, he should be able to recognize the fact, and refer his patient to the specialist, who, as a result of a large and varied experience, has acquired special skill. A large part, however, of the more common affections, such as disorders of menstruation, displacements and inflammatory processes, should be thoroughly understood and successfully treated by any well educated physician.

That this is not the case—that many practitioners, who are thoroughly at home in the general practice of medicine and surgery, fail in the diagnosis and treatment of this class of cases—may in a measure be accounted for on these grounds. The opportunities for the practical study of this branch of medical science are, from the nature of the case, few, and only to be had in the large cities, and even there have only within the last few years been placed within reach of the medical student. Now, however, the best medical schools, by increasing the length of the period of study necessary for a degree, and by recognizing the

importance of this specialty, are giving additional opportunities to the student, and the establishment of polyclinics in our large medical centers is doing the same for the post-graduate and practicing physician. As time goes on, that difficulty will be gradually overcome.

A second reason why this branch has been neglected by the profession at large is that there is a prevalent impression that the treatment of diseases of women necessitates a high degree of special skill and the use of a formidable array of instruments. It is supposed to be complicated, and to require more time than a busy man can well afford. The text-books on this subject, with their long descriptions of operative procedures, and their numerous cuts of instruments, are, perhaps, partially responsible for this prejudice. The objection will fall to the ground when it can be shown that the diagnosis and treatment of diseases of the genital organs really rest on a few simple, general principles, which, if mastered, will make the physician as much at home in this department as in any other of medicine.

Here, as in all branches of medical science, special pains must be taken to get well grounded in the A B C of the subject, and this necessary knowledge is something which cannot be acquired from books, but must be the result of careful and frequent examinations of patients. The first great requisite for anyone who undertakes to treat even the simplest case of uterine disease, is familiarity with the method of bimanual examination, and the use of the few simple in-

struments which assist in making a diagnosis when the former method fails. A second important factor is the recognition of the fact that in general the treatment of the larger part of the diseases of the pelvic organs met with in every-day practice is in accordance with certain well-defined principles, which, if simply formulated and clearly understood, will do away with much of the obscurity which exists in the minds of the profession at large with regard to this subject.

I have, therefore, in writing this book, tried to keep two objects distinctly in view: First, to explain simply, yet clearly and in sufficient detail, the methods of examination and the various manipulations necessary in the diagnosis and treatment of this class of cases; and second, so to classify the various disorders of the pelvic viscera with which we have to deal, partly according to prominent symptoms, as to render their recognition easy and to place their treatment on a common-sense basis.

## CHAPTER II.

### ANATOMY.

It is impossible in the scope of a manual like the present one to go exhaustively into the detailed anatomy of the pelvic organs, but it is important to preface the subject with a brief summary of the *practical* points which every student and practitioner should know.

As an introduction, and as of value in the study of malformations, a short sketch of the development of the female genitals is appropriate.

The first organs to appear are the Wolffian ducts, situated on either side of the vertebral column which connect later with the Wolffian bodies. These are two long spindled-shaped bodies, which are attached to the dorsal wall of the abdominal cavity, and stretch from the diaphragm to the pelvis. There is a narrow fissure on either side (Fig. 1). In the two inner ones the genital gland develops, testicle or ovary according to sex, in the two outer ones the Wolffian ducts and later the ducts of Müller. The Wolffian ducts gradually disappear, so that at the best only the slightest traces persist. Müller's ducts on the other hand remain, and form eventually the genital tract. While their upper portions remain distinct and form the Fallopian tube on each side, their lower portions coalesce, and form the uterus and vagina. All these changes are completed by the end of the fifth month (Figs. 2-5).



The external genitals develop in the following manner :

The ducts of Müller at first open into the allantois,

Human Embryo of thirty-five days (front view): 3, left external nasal process; 4, superior maxillary process; 5, lower maxillary process; *z*, tongue; *b*, aortic bulb; *b'*, first permanent aortic arch; *b''*, second aortic arch; *b'''*, third aortic arch, or ductus Botalli; *y*, the two filaments to the right and the left of this letter are the pulmonary arteries, which begin to be developed; *c*, the stem of the superior cava and right azygos vein; *c'*, the common venous sinus of the heart; *c''*, the common stem of the left vena cava and left azygos; *o'*, left auricle of the heart; *v*, right, *v'*, left ventricle; *ae*, lungs; *e*, stomach; *j*, left omphalo-mesenteric vein; *s*, continuation of the same behind the pylorus, which becomes afterward the vena porta; *x*, vitello-intestinal duct; *a*, right omphalo-mesenteric artery; *m*, Wolffian body; *i*, gut; *n*, umbilical artery; *u*, umbilical vein; 8, tail; 9, anterior, 10, posterior limb. The liver has been removed. The white band at the inner side of the Wolffian body is the genital gland, and the two white bands at its outer side are the Müllerian and the Wolffian ducts (Kölliker, after Coste).

FIG. 1.

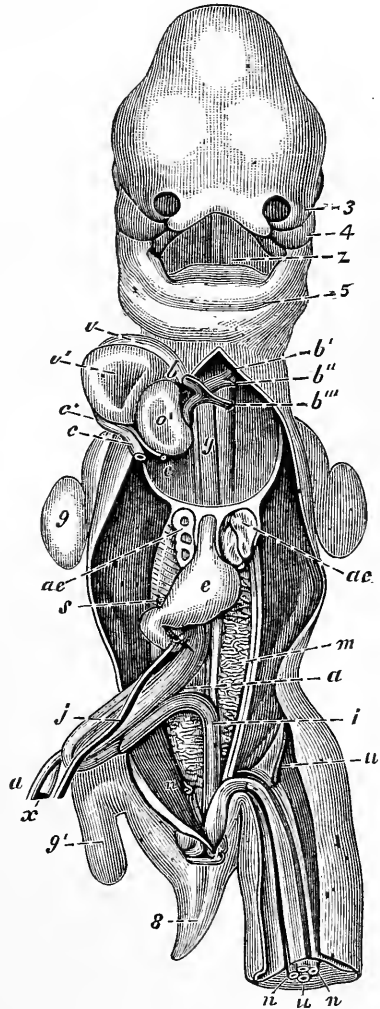
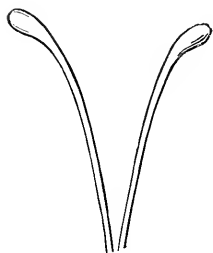
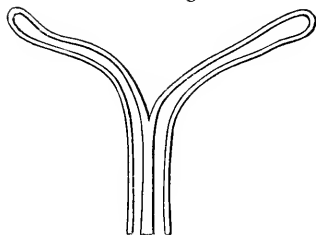


FIG. 2.



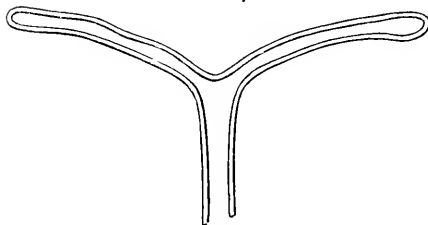
Müller's ducts.

FIG. 3.



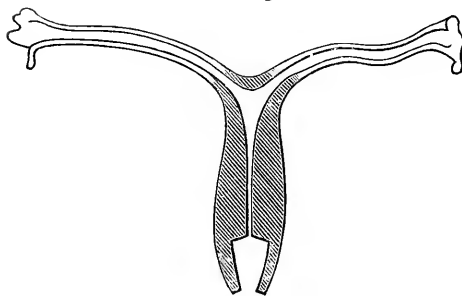
Coalescence of ducts.

FIG. 4.



Disappearance of septum.

FIG. 5.



Appearance of fundus and cervix.

or the lower part of the intestinal tract (Figs. 6-7). About the 6th week the genital tubercle appears, in which a depression develops, which communicates

FIGS. 6 AND 7.

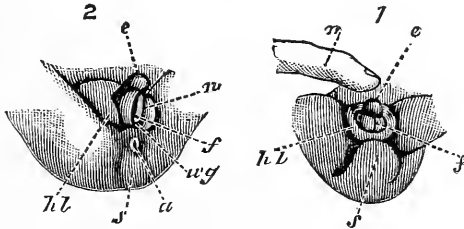


FIG. 6.—*cl*, cloaca; *all*, allantois; *m*, Müller's duct; *r*, rectum (Schroeder).

FIG. 7.—*su*, sinus urogenitalis; *r*, rectum, separated by the perineum; *v*, vagina, lower part of Müller's duct; *b*, bladder; *u*, urethra (Schroeder).

with the allantois (Figs. 8-9). This is then called the cloaca and is the common opening of the intestinal and genital tracts. By a growing down of the tissues

FIG. 8.

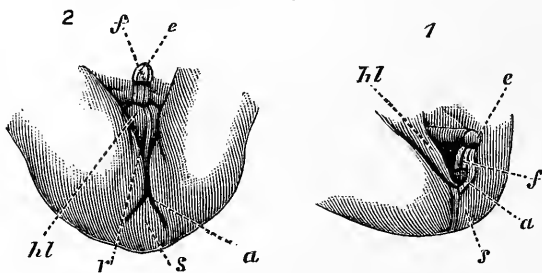


Formation of the External Genitals in Mankind. 1, lower portion of the trunk of an embryo from the eighth week, double size; *e*, gland or point of the genital eminence; *f*, genital furrow leading back to an aperture which at this period communicates with the rectum, and consequently is a cloacal opening; *hl*, genital folds; *s*, caudal extremity of the body; *u*, umbilical cord. 2, from a Female Embryo about 10 weeks old and 1 inch and 2 lines long; *a*, anus; *ug*, entrance to sinus urogenitalis; *n*, edges of genital furrow or labia minora. The other letters as in 1 (Kölliker).

this opening becomes divided into two—anal and the genito-urinary—divided by the perineum. The bladder develops from the urachus and the urethra by a narrowing of its lower end.

In the light of this brief sketch of the development of the genital organs, some of the malformations which we meet with in practice will become intelligible. Those connected with the ovaries and Fallopian tubes are few in number, and of little practical importance by themselves. Absence of these organs while rare is usually associated with absence of the uterus.

FIG. 9.



1, from an Embryo 1 inch long, double size, representing a stage that precedes Fig. 8; 2, the sex is not yet distinguishable. 2, from the Male Embryo from the end of the third month, 2 inches and  $1\frac{1}{2}$  lines long. Letters as in Fig. 8. In 2 the genital furrow is closed, forming the raphé (*r*) of the penis, scrotum and perineum (Kölliker).

The anomalies of development of the uterus are more common. Inasmuch as the uterus is formed by the fusion of the two ducts of Müller any failure of these to fuse perfectly will result in a malformation. Thus there may be a complete arrest of development of the ducts resulting in an absence of the uterus, or a partial arrest, which gives us a rudimentary uterus.

If one of the ducts fails to develop before union takes place we have a one-horned uterus. A two-horned uterus is where Müller's ducts coalesce at a lower point than usual, so that we have a double fundus. This may be more or less pronounced according to the degree of fusion.

A double uterus is where the lack of fusion extends as far as the vagina, with two cervices. The septum may or may not extend through the vagina.

The uterus may have a single cervix, but the body be divided by a septum into two cavities.

The uterus may fail to develop and we have a fœtal, or infantile, or puerile uterus according to its size or shape.

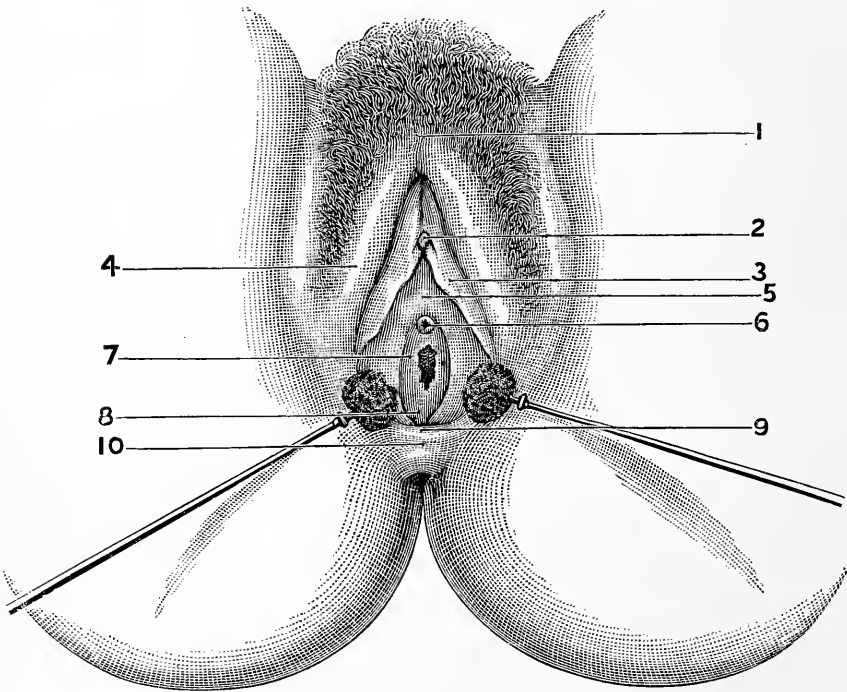
The most common deformity of the vagina is a partial or complete closure of its lumen by septa. There may be a complete absence of it, or there may be narrow septa either complete or partial at various points. Double vagina has been spoken of.

Atresia of the hymen, by which we mean a solid membrane which completely closes the entrance to the vagina, is perhaps the most common, and on account of its effects, and possibility of being perfectly remediable, is of the most importance. The symptoms it causes, its diagnosis and treatment will be spoken of in detail later.

We now come to the normal anatomy, and in taking up the various organs and groups of organs I shall endeavor to confine myself to those anatomical points which are of practical importance. We begin with the external organs of generation (Fig. 10). A

knowledge of the configuration of the external genitals is of importance in order that we may appreciate the various deviations from the normal which may occur. As the visual inspection is made with the patient on the back we will enumerate the different organs beginning with the uppermost.

FIG. 10.



External organs of generation. 1, mons Veneris; 2, clitoris; 3, labia minora; 4, labia majora; 5, vestibule; 6, meatus urinarius; 7, hymen; 8, fossa navicularis; 9, fourchette; 10, perineum.

*Vulva.* The mons Veneris is usually reckoned with the genital organs. It is the fatty protuberance overlying the pubic bone, which is after puberty covered with hair. Immediately below it at the beginning of the genital cleft lies the clitoris. This is the analogue

of the male organ, and like it has crura, a body, a glans and a prepuce. It is in its entirety not more than an inch in length, and of this only the glans projects so that it can be seen. The rest can only be demonstrated by dissection. The glans is only partly covered by the prepuce which is formed by the upper of the two folds into which the labia minora divide, the lower ones meeting in the median line beneath the glans, and forming the frenulum. The blood and nerve supply of the clitoris is very rich, especially the latter. The clitoris occupies the apex of a triangular space which is called the vestibule. Its sides are formed by the edges of the nymphæ or labia minora and its base is on a level with the upper border of the vaginal opening. It is of importance only as containing the orifice of the urethra.

The labia majora, or external lips of the vulva, begin at the mons Veneris and extend downwards and backwards and lose themselves in the perineum. They are fairly thick folds, containing adipose tissue, and their external surfaces are covered with hair. In young persons they meet so as to conceal the vulvar opening, unless the thighs are widely abducted.

The labia minora are two smaller folds of tissue which start from the clitoris above, bound the vestibule and then lose themselves about opposite the middle of the vulvar orifice, to reappear again below the same, forming the band known as the fourchette. The space between this and the lower border of the hymen is called the fossa navicularis.

It is a disputed point whether the covering of the

labia minora is skin or mucous membrane, but the preponderance of authority seems to be in favor of its being more like delicate skin.

Situated on either side of the vulva beneath the superficial perineal fascia are two small bodies, composed of blood vessels, called the vaginal bulbs. They are on a level with the upper part of the vaginal orifice—a prolongation from each upwards to meet in the median line below the meatus urinarius.

The vulvo-vaginal glands, also called the glands of Bartholini, are situated below the vaginal bulbs, and opposite the lower third of the entrance to the vagina, in or beneath the deep perineal fascia. They are racemose in character and secrete a clear fluid which serves to lubricate the parts. Their ducts open by a minute orifice situated between the outer border of the hymen and the base of the labia minora. A minute dimple, slightly redder than the mucous membrane, generally marks their point of exit.

These organs which have been described constitute what are known as the external organs of generation and collectively make up the vulva.

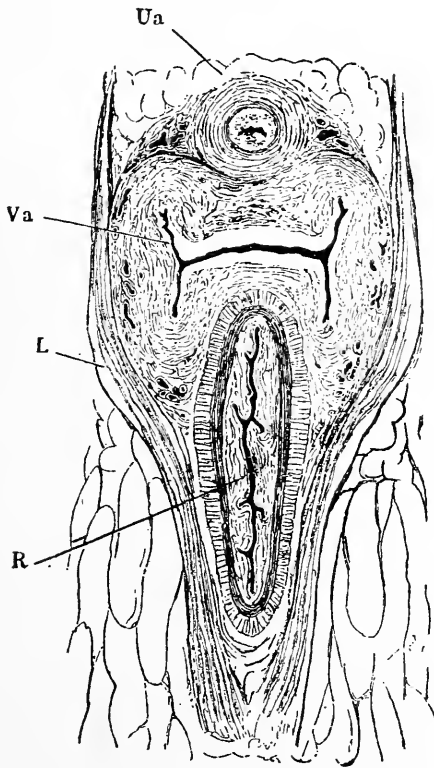
*Vagina.* The vagina is the connecting link between the external and the internal organs. It is separated from the vulva by the hymen. This structure is not merely a fold of mucous membrane, but a folding in of the whole vaginal structure, constituting a true narrowing of the canal at that point. It varies much in its appearance, being sometimes thick and fleshy, sometimes thin and fibrous, sometimes resistant, sometimes soft and yielding readily to pressure. The opening



may be single and narrow and circular, or large and irregular in shape, or again may be crescentic or double. Occasionally the opening is minute and situated at the extreme upper border. It is usually ruptured at the first coitus, being split in several directions. These segments of the hymen do not shrink and atrophy, however, until after the first labor when they are called the *carunculæ myrtiformes*.

The direction of the vagina with the woman in the erect posture is upwards and backwards, having a curve

FIG. II.

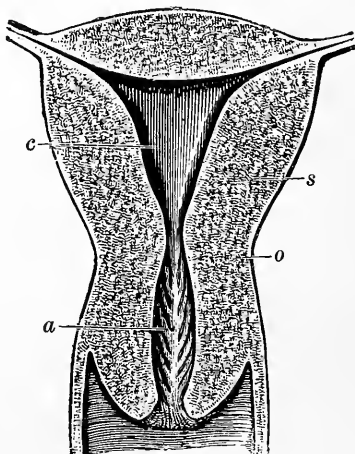


Vertical transverse section of the soft parts at the pelvic outlet; *Ua*, Urethra; *Va*, Vagina; *R*, Rectum; *L*, Levator ani (Henle).

with its concavity forwards. As a consequence the posterior wall is longer than the anterior. This discrepancy in length is increased by the fact that the posterior wall is attached to the cervix at a higher point than the anterior. The anterior and posterior walls lie in apposition, the lateral walls being folded upon themselves, so that on cross section the vagina forms a letter H (Fig. 11). The cervix uteri projects into the upper part of the vagina, and the depressions thus formed are called the cul-de-sacs, posterior, lateral and anterior respectively. From what has been said it will be seen that the posterior cul-de-sac is deeper than the anterior.

*Uterus.* The uterus is a pear-shaped structure which is situated in the middle of the pelvis and is the organ in which the foetus develops (Fig. 12). It is

FIG. 12.



Section of the uterus before childbirth. *a*, cavity of cervix; *c*, cavity of body; *o*, os internum; *s*, uterine wall (From Barnes, after Farnier).

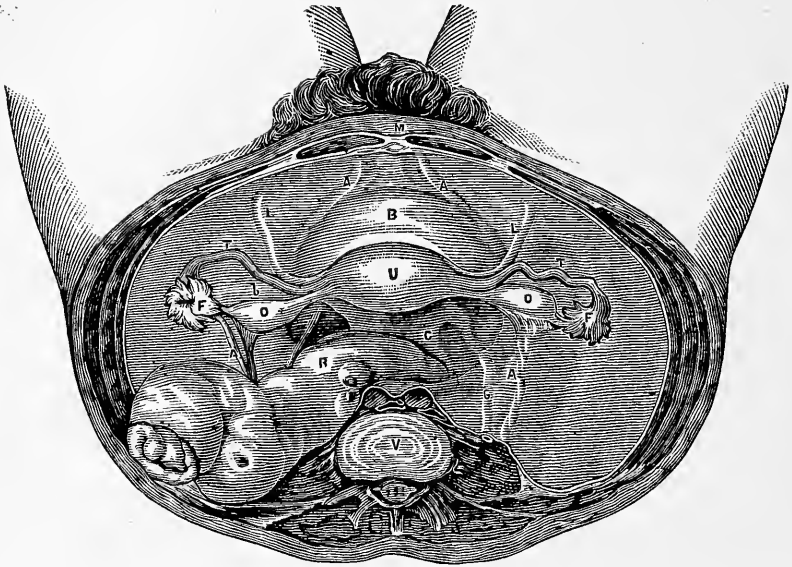
hollow with relatively thick muscular walls. It is roughly divided into the body and neck. The uterine canal is about two and one-half inches in length, narrowed at a point about one inch from the external orifice. This last is called the os externum, the other higher up, the os internum. All that part of the uterus situated above the os internum is called the body, that below, the neck or cervix uteri. That part of the body above the level of the Fallopian tubes is called the fundus.

The insertion of the vaginal walls into the neck of the uterus is at a lower level than the os internum ; that part therefore which projects into the vagina is called the infra-vaginal, that between the insertion of the vagina and the internal os, the supra-vaginal cervix.

The blood supply of the uterus comes mainly from two arteries, the ovarian, which supplies the ovary and upper part of the uterus, and the uterine which supplies the lower part, entering a little above the lateral cul-de-sac. This artery is situated between the layers of the broad ligament, giving off numerous small branches to the substance of the uterus, and anastomoses with the ovarian artery.

*Fallopian tubes.* The Fallopian tubes or oviducts start from the upper angles of the uterus, and run outwards and backwards and downwards (Fig. 13). They are from three to four inches in length and have a very small lumen, which opens into the uterine cavity at one end, and at the other into the abdominal cavity. This end is surrounded by a row of fringes called the fimbriæ, one of which is attached to the ovary, and

FIG. 13.



Transverse section of the body, showing relations of fundus uteri (Savage): *M*, pubes; *A,A*, hypogastric arteries in front, spermatic vessels and nerves behind; *B*, bladder; *L,L*, round ligaments; *U*, fundus uteri; *T,T*, Fallopian tubes; *O,O*, ovaries; *R*, rectum; *G*, right ureter; *C*, utero-sacral ligaments; *V*, last lumbar vertebra.

serves to keep the expanded surface of the fimbriated extremity turned towards the ovary.

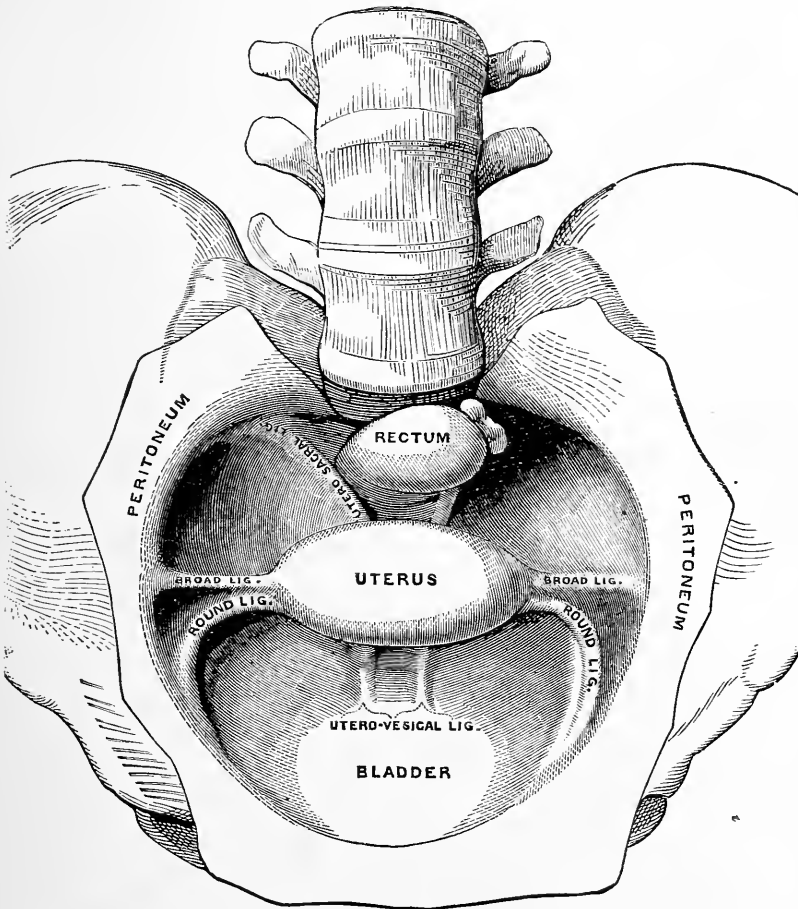
*Ovaries.* The ovaries are two oval shaped bodies, which are attached by about a third of their extent to the posterior surface of the broad ligaments, set in, as it were. They are steadied in their position by a ligament which attaches them to the uterus, running in the substance of the broad ligament. These organs contain the Graafian follicles which slowly enlarge, and pressing aside the intervening tissue, finally break through to the surface and discharge the ovum.

In favorable cases they can be palpated on bimanual

examination by pressing deeply to one side and back of the plane of the uterus, and depressing the abdominal walls to meet the finger in the vagina.

The ligaments which help to support the uterus are eight in number—four pairs (Fig. 14). They are the sacro-uterine, the vesico-uterine, the broad and the round. The sacro-uterine run from the posterior sur-

FIG. 14.



The reflections and pouches of the pelvic peritoneum (Hodge).

face of the uterus at about the level of the internal os, backwards and upwards and outwards to the second sacral vertebra. They are mainly folds of peritoneum with a few muscular fibres.

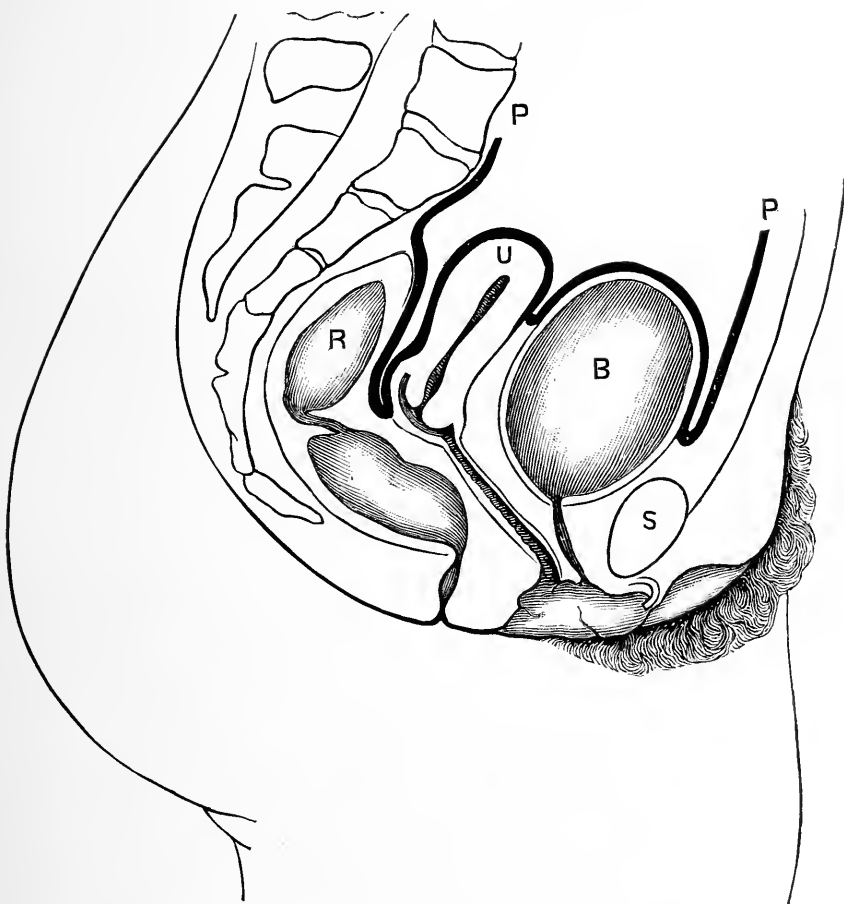
The vesico-uterine ligaments are smaller folds which pass from the anterior surface of the uterus to the posterior surface of the bladder.

The broad ligaments run from either side of the uterus to the pelvic wall. They are well defined folds of peritoneum, thin at the top, and growing thicker as they proceed downwards, and in them are situated the nerves and blood vessels which supply the uterus. They also contain connective tissue and muscular fibres.

The round ligaments are two thin muscular cords which are attached to the anterior surface of the uterus, near the upper angles, and run upwards and outwards to the inguinal canal through which they pass, and are split up and distributed in the mons Veneris.

*Pelvic Peritoneum.* The pelvic peritoneum is continuous with the abdominal peritoneum. From the anterior abdominal wall it passes over to the bladder, covering its upper third, then to the uterus at a level above the internal os. It passes over the fundus uteri, and down its posterior surface to a point almost opposite the upper limit of the vagina, and then on to the rectum and the posterior abdominal wall (Fig 15). A knowledge of these relations is important in many operations on the pelvic organs, either by the abdominal or vaginal route.

FIG. 15.



Diagrammatic representation of the pelvic peritoneum, as seen in a mesial section (Ranney): *P, P*, peritoneum; *R*, rectum; *U*, uterus; *B*, bladder, distended; *S*, symphysis pubis.

This general and brief account of the anatomy of the pelvic organs will be supplemented by a more detailed exposition of the essential facts, as we come to speak of the various diseases.

## CHAPTER III.

### METHODS OF EXAMINATION.

*Verbal examination.* When a patient is seen for the first time, it is essential to get from her a full history of her troubles. This includes former symptoms which have a bearing on her case, and her present condition. Such a history should be written down at the time, and preserved for future reference. The particular form used is of little importance. A number of blank forms have been devised and advocated by different writers, which are of value where a number of long histories have to be taken in a short time, but in general they are unnecessary. If the important features of case-taking are remembered, the particular order is of small account.

Aside from such general questions as hereditary tendencies and previous serious illness, the main points of inquiry should be with reference to the sexual organs and their functions. Preliminary questions which are important, are as to whether she is married, or single, or a widow, the number of children, and their ages; miscarriages, and if there have been such, their date, at what period of gestation they occurred, and from what cause. Then, present symptoms, and how long they have lasted. The menstrual process should be very carefully inquired into, the date of its appearance, whether regular or not, and if irregular,



in what way, the time it lasts, the amount as estimated by soiled napkins and clots, and the presence or absence of pain. This last should be most fully investigated. The time of its occurrence with reference to the flow, its intensity and duration, its exact seat and character, are all essential facts in forming a diagnosis. The same is true of pain occurring independently of the menstrual period. A careful study of this symptom, which is so common with women, should throw a good deal of light on the causation and diagnosis of diseases of the pelvic organs.

The presence and character of leucorrhœal discharges should then be inquired into, and inasmuch as bladder and rectum are properly included in the pelvic viscera, their functions should be interrogated.

Unless some special feature of the case renders it advisable or necessary, the sexual relations need not be inquired into.

In most departments of medicine the rational symptoms will, as a rule, enable the observer to form a probable diagnosis, or at least to narrow the choice to two or three diseases. Not so in gynecology. Here there are so many symptoms common to so many widely different affections, that only rarely can a probable diagnosis be made without a physical examination. The verbal examination may, therefore, be considered a preliminary step to the physical, and aside from the information which it yields, the asking and answering of questions place physician and patient "en rapport," and pave the way for the more important and more trying ordeal.

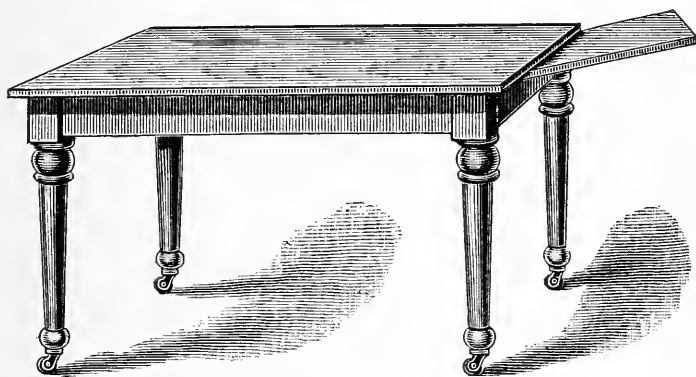
*Physical examination.* The interests both of patient and physician alike demand that the method of examination employed should be so chosen as to secure thoroughness on the part of the physician, with as little discomfort to the patient as possible. For this purpose a table, or a chair which may virtually be converted into a table, should be used. Its advantages are obvious. It gives a firm surface at the right height for the introduction of the finger in the bimanual examination, and for the entrance of light into the vagina when the speculum is used. A sofa should never be made use of, much less a bed. Both are too low; and on a bed the patient so sinks into the soft mattress that a satisfactory examination is well-nigh impossible. As a rule, when a patient is too sick to be moved from the bed, a thorough examination, either bimanually, or with the speculum, is rarely necessary.

*Table or chair.* At the physician's office the table or chair is an integral part of the office furniture. There have been made and are for sale a large variety of both these articles of furniture, ranging from the simplest to the most elaborate. The special circumstances of each physician will determine the kind he will find most useful. Where he has a large and varied office practice, especially if it embraces surgery, one of the simpler forms of adjustable chairs, which can be modified to suit the particular need of the moment, will perhaps be found the most convenient. If a table is used, my own experience leads me to believe that the simpler it is the better. Any carpenter can make one of hard wood, with strong legs, and a slid-

ing foot-rest at one corner, for from ten to fifteen dollars, which will answer every purpose that the more elaborate tables do. It is not so æsthetic, perhaps, but when covered with a cloth it is not unornamental.

It should have the following dimensions : Length, four feet ; width, two feet ; height at upper end, thirty inches ; at lower end, thirty-two (Fig. 16). At the

FIG. 16.



Examination Table.

lower right-hand corner, as one faces it, is the foot-rest, which should slide out at an angle of 45 degrees with the sides, so as to accommodate the feet when the patient is in Sims's position. It is higher at the lower end, so as to favor the action of gravity in allowing the abdominal viscera to recede out of the pelvis. Stirrups for the feet, when in position on the back, are unnecessary, for if the patient flexes her knees, so as just to bring the heels comfortably upon the edge of the table, the hips are brought low enough down to render the vaginal examination easy. The

castors should be strong and well oiled, so as to permit of easy motion in any direction.

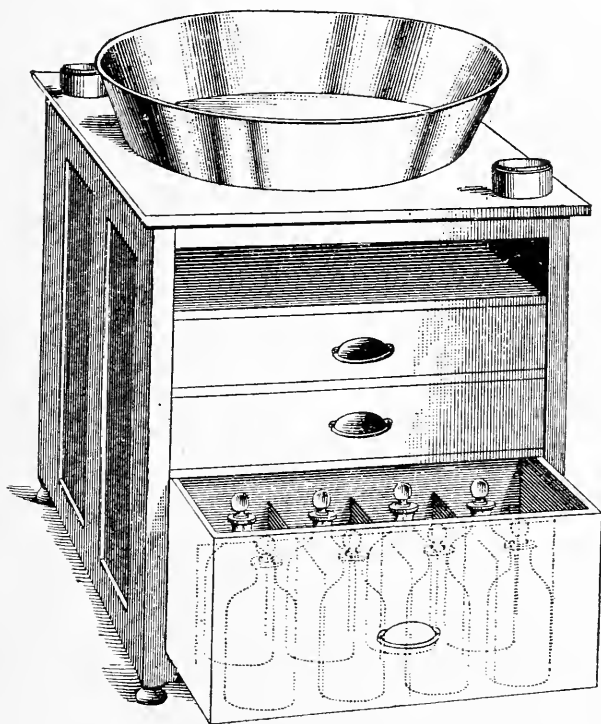
It has been claimed as an argument against a table, and in favor of a chair, that the table looks formidable, and patients object to getting upon it. Such has not been my experience, and when arranged, as will be explained later, it has lost so much of the aspect of a table that this objection can be dismissed. While the various chairs that are sold have, as has been said, a greater range of adaptability for all sorts of cases occurring in the course of general practice, yet in purely gynecological work their very complexity is a source of annoyance, nor does it add at all to their usefulness. The simple table answers every purpose. The two positions, the dorsal and Sims's, are the only ones that the great majority of patients need assume for the most thorough examination, and the only change needed in the table in passing from one to the other is arranging the rest for the feet. The arrangement by which the surface of the table or chair is given a lateral inclination, so as to exaggerate the Sims's position, is wholly unnecessary. In the rare cases where it is desirable to make the patient assume a still more prone position than Sims's, as, for example, in examining the rectum, a pillow pushed under the buttocks will accomplish the object.

Many tables are objectionable from the fact that they are provided with a set of drawers for instruments and apparatus which fills up the front of the table, so that the operator's knees are seriously incommoded when using the speculum. It is decidedly

better to have the space between the legs free, so that the physician can sit comfortably and well up to the table.

*Stands for instruments.* A small, supplementary piece of furniture to hold the basin of water, with a

FIG. 17.



Stand for Instruments.

shelf and one or two drawers, will accommodate instruments and all the moderate armamentarium which is necessary, and can be procured at a moderate expense. The one figured here (Fig. 17) has a marble slab top, with a round opening in which the basin

rests. It is large enough to allow space at the corners for soap or other lubricant, jars of cotton dressings, etc. The shallow open space under the slab is lined with zinc, and is used as a receptacle for soiled instruments; they are thus out of sight of the patient. This space, when not in use, is closed with a narrow strip of wood in harmony with the rest of the front.

Below are two shallow drawers for instruments, cotton and various other appliances; and last of all is a deep drawer divided into two compartments, in the forward one of which are places for eight or ten bottles, and the other may be used as a receptacle for pessaries.

There should be provided, also, a jar with a cover, into which bloody or foul dressings may be put and kept out of sight. Bowl and pitcher, and receptacle for water after it has been used (unless a water-closet is convenient), will, of course, be added to the office furniture.

The physician starting in practice will very soon find out the necessity of having such arrangements about him as will enable him to examine easily and thoroughly.

*Examination at patient's home.* It is often a matter of more difficulty, however, to arrange such conveniences at the patient's home. She herself, and too often the physician, is contented to accept what is convenient rather than take the trouble to have what is best. The examination, to be thoroughly satisfactory to both parties, should be made in the way the physician is accustomed to; otherwise, he will not feel that

he is doing his best by his patient, nor that his examination is as complete as can be made. Therefore, insist upon having a table, and, as a rule, a satisfactory one can easily be provided. An ordinary library or dining table, or, what never fails in the poorest home, a kitchen table, will answer every purpose. If it cannot be brought to the sick-room, one may be improvised by placing together two smaller pieces of furniture, as a commode and washstand, or small table and bureau, or by laying the leaf of a dining table or two ironing-boards side by side, from one small table to another.

*Arrangement of table.* The table should be arranged in this way: A thick blanket or comforter is folded sufficiently to make a comfortably soft surface to lie upon, and placed upon the table. This is covered with a sheet, a pillow placed at the head, and the table resembles a short bed. When so prepared, it has to a certain degree lost its look of a table, and is rarely objected to. When it is kept ready for use in the office, the thin mattress or other covering should be fastened firmly down, so that it may not be displaced by the movements of the patient.

*Arrangement of patient.* If it can be arranged beforehand, the patient should be instructed to see that the bowels and bladder are empty. The corset and all skirt bands must be loosened, or if she is at her own house all extra clothing should be removed and she should be dressed in a loose wrapper. The loosening of the clothing is a bugbear to the patient, but it is a matter of great importance both as regards her com-

fort and the ease with which the examination is made, especially when the patient is in Sims's position. A single tight band will often seriously interfere with a good view of the cervix through the speculum. If the patient wears closed drawers, she should be instructed to remove them.

*Dorsal position.* The patient is directed to stand upon a chair or stool placed at the foot of the table, and raising all the clothing behind, to sit upon the edge as low down as is comfortable. She then lies back, a pillow is put under her head, and she raises her feet and rests them with the heels upon the edge. A sheet is placed over her lap as she sits down, and hangs down in front so as completely to cover the legs. The hand should then be passed under the sheet, and the clothing pushed up above the knees, so as to admit of their being separated with ease. In this way all exposure is avoided, a matter of a great deal of importance to the patient, who, though she may not express it, will appreciate any care on the part of the physician in this regard.

*Vaginal examination.* The so-called combined or bimanual examination is the most important of all gynecological manipulations, and should be thoroughly understood. In the majority of cases the diagnosis may be made slowly by it, instruments being necessary only to confirm what the fingers have already found out. I shall, therefore, describe the method as minutely as possible.

*Lubricants.* A bowl of warm water with castile soap or some emollient should be at hand. I prefer



soap in dispensary and hospital work, inasmuch as after the examination the soap with the secretions which adhere to the finger can be together much more easily washed off than can any oily substance. The objection to it is that in very sensitive women the soap will sometimes cause smarting and irritation.

Vaseline, vaseline and cold cream, olive oil, or any smooth ointment is better to use in private practice. Before introduction the hand should be well warmed and lubricated, so as to render the entrance of the finger as smooth and easy as possible. In passing the finger into the vagina avoid any sudden movements ; the quieter and steadier the doctor is, the less disturbed will the patient be, and in the case of a nervous woman who dreads the examination this is very important.

*Advantages of left hand.* The more thoroughly the touch is educated, the easier will it be to make a diagnosis. For this reason it is well to use in general the same hand for all vaginal examinations, and there are certain advantages in selecting the left hand for this purpose. In the first place, the left forefinger will explore more easily the left side of the pelvis, and it is a fact that pathological changes occur more often upon the left than upon the right. In the second place, it leaves the stronger right hand to make counter-pressure over the abdomen. In the third place, which is the most important consideration, the right hand is free with which to use instruments or perform any other manipulation necessary. It is occasionally desirable to pass the probe with the patient on the back, or to

explore the interior of the uterus with the finger, or to remove small tumors in the cavity of the uterus. In such cases the educated touch of the left hand will distinguish the various parts, while the right hand will easily use any instrument which is necessary.

As a rule, only the forefinger should be used. In the majority of cases one can very satisfactorily explore the pelvis with a single finger, and the introduction of two fingers is painful. Under ether, or where the entrance to the vagina is very wide, there is no objection to the use of two, and a clearer idea of the relationship of tumors may often be gained by it.

*Introduction into the vagina.* Having well lubricated the forefinger of the left hand, it should be carefully introduced into the vagina. This may be done by the sense of touch, under the sheet which falls down over the patient in front, and it is often a relief to a sensitive woman to be spared the shock to her modesty which the exposure necessary for the inspection of the vulva entails. If the patient is lying in the middle of the table, with the knees abducted at equal angles, the cleft between the nates and the entrance to the vagina will lie directly in the median line, and the finger easily finds the vulvar orifice. In the position in which the woman is lying the opening of the vagina is often, especially in thin women, very near the level of the table, at most not more than two inches above it. The finger, therefore, should be directed downward toward the table (Fig. 18), and should aim to strike in the neighborhood of the perineum or anus. This will avoid hitting the clitoris or meatus urinarius,

which are sensitive parts, the touching of which is apt to cause a shrinking and muscular contraction on the part of a nervous woman. It is then carried directly upward over the perineum and fourchette into the vagina. This is easily accomplished, as the labia minora end a short distance above the fourchette, and the hair, which may grow luxuriantly, is also wanting on the

FIG. 18.



Finger in position for examination.

lower border of the vulva and perineum. Passing the finger from above, both hair and the labia are liable to be pushed before it into the vagina, greatly to the discomfort of the patient.

In a virgin, or a person of a nervous temperament, it occasionally happens that the finger, after it has got within the vulva, will be so tightly grasped by the firm unyielding perineal body that it is with difficulty passed onward. If the flexor side of the finger is turned downward, and steady pressure made on the perineum for a fraction of a minute, the muscular contraction will usually yield. A slight rotary motion will often facilitate the introduction of the finger where the entrance is small.

*Examination of vagina.* The direction of the vagina as the woman is lying on her back, if the perineum is intact, is first downward and backward toward the hollow of the sacrum, gradually curving round more in the axis of the body. If the perineum is wanting, it more nearly approximates a straight canal.

As the finger passes over the perineum into the vagina, the state of the perineal body can be judged of, though its exact condition must be determined by sight. The examining finger, as it passes along the vagina, notes the condition of the vaginal walls, whether they are lax or firm, smooth or rough, dry or bathed with secretion, unduly hot, the presence of cicatricial bands or secretions, or any other abnormalities or peculiarities.

The finger is passed on until it reaches the upper end of the vagina, where it finds the cervix uteri. This is a firm conical-shaped body, projecting into the vagina, having a small orifice at the end, the os externum. Its shape, size, direction and consistency should all be noticed, as these may vary almost in-

definitely, and are extremely important as points of diagnosis.

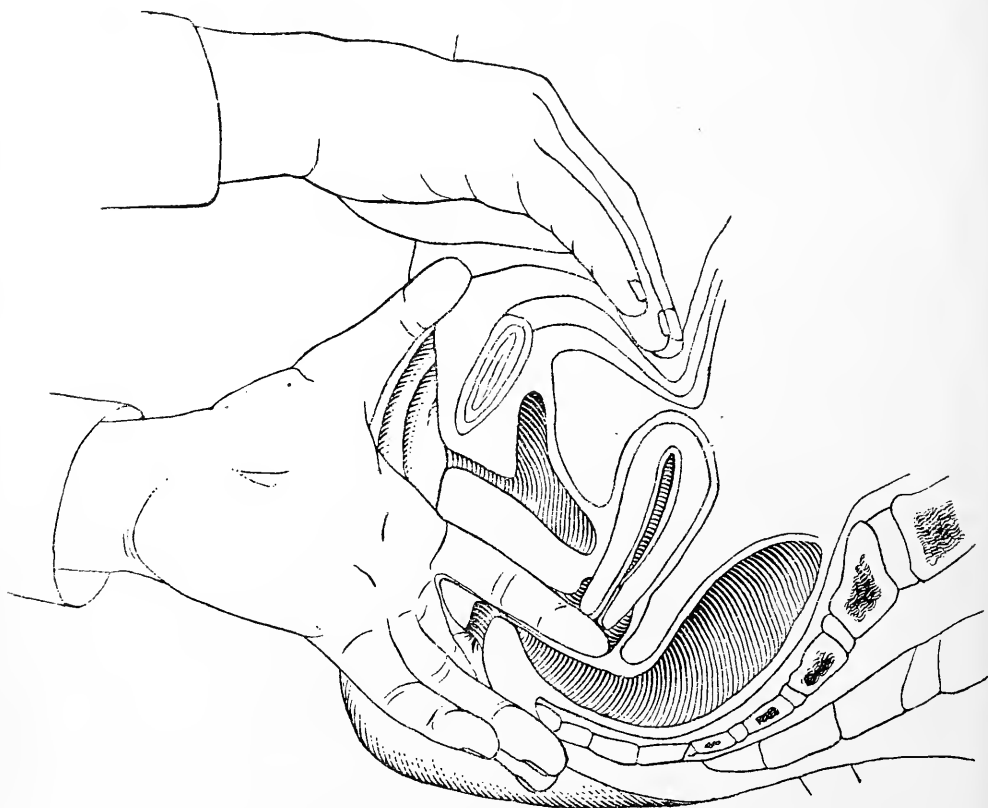
The posterior vaginal wall is attached higher up on the cervix than the anterior, hence we have a deeper posterior cul-de-sac. The finger should be carefully passed all around the cervix, front and back and at the sides, to detect the presence of any abnormal hardness, as the body of the uterus, a tumor or inflammatory thickening.

- *Bimanual examination.* At the same time that the forefinger of the left hand is passed into the vagina, the right hand should be carried under the clothing on to the abdomen, in order to make counter-pressure. In fact, the examination may often be advantageously begun in this way, especially in the first examination of a nervous, hysterical woman, as it gradually paves the way for the more trying vaginal exploration. No examination of the vagina alone should be considered sufficient; in fact, I consider the bimanual examination as the keystone of gynecology. Its neglect causes numerous mistakes in diagnosis which might readily be avoided.

The object of the conjoined manipulation is to map out as completely as possible the contents of the pelvis and their condition. To accomplish this it is necessary to determine what lies between the examining finger on the inside and the hand upon the outside. It is here more than anywhere else that the education of a delicate touch becomes of value. To determine accurately the position of the uterus, its size and shape, the presence of tumors, their relation to the uterus and

ovaries, the position and size of the ovaries, whether a tumor is solid or not—these are but a few of the more obvious facts which we seek to find out by our bimanual examination. The method is in general to depress the abdominal parietes with one hand and raise the contents of the pelvis with the other, so as to bring them between the two hands, and thus determine their condition (Fig. 19). Definite rules cannot be given how best to do this, but some hints may be

FIG. 19.



Bimanual examination.

of use. The ability to make the bimanual examination easily and well comes only with long and careful practice.

I am asked every year by the class of students who make these examinations for the first time, where on the abdomen they shall make pressure and how hard they shall bear on. I tell them that, as a rule, a little above the upper margin of the growth of the pubic hair is a good landmark from which to begin, as that in general represents the place where the fundus of the uterus in its normal position would be felt. The vaginal examination will usually give hints as to misplacements or swellings in one or another part of the pelvis, if such exist, which will lead to the place of pressure being varied to suit the individual case.

The degree of force to be used in making pressure is something which cannot be communicated, but must be the result of experience. If the abdominal walls are lax, as is usually the case in multiparæ, firm, steady pressure will enable the examiner to depress them sufficiently to map out the relations of the pelvic organs.

When a reasonably firm pressure has depressed them as much as they can be without pain to the woman, several short, quick movements with the tips of the fingers will bring the hand still farther down into the pelvis, and the indefinite rounded contour of the fundus may be felt. This is often a difficult point for the beginner to recognize. He is expecting something plainer, with definite outlines, like the oval fundus as represented in the text-books. The thing to be felt for

and to be noted is the presence of a solid body between hand and finger. If the fundus is back, the movements before described will not reveal anything but soft tissues. The movements of the finger in the vagina and the hand on the outside must be simultaneous.

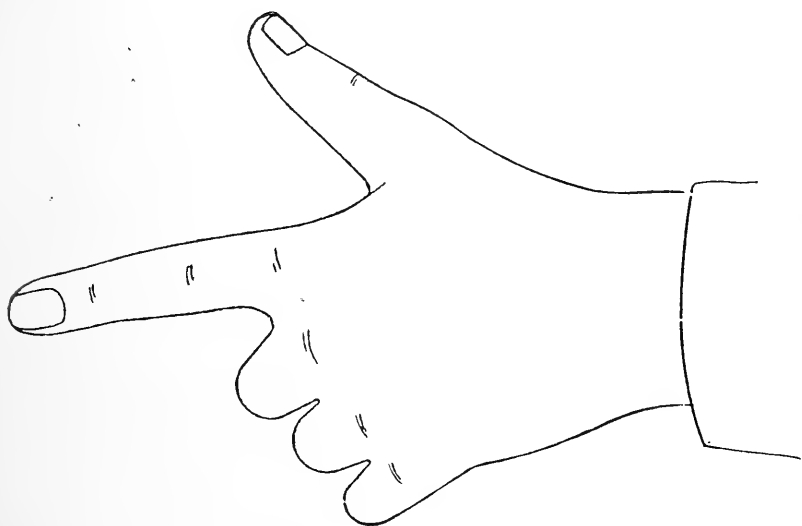
*Difficulties in bimanual examination.* In nulliparæ or virgins the bimanual examination is often difficult, owing to the rigidity of the muscles, which, on any attempt at pressure, contract so firmly that no impression can be made. This is sometimes the result of tenderness, but more often of nervousness. If the latter is the case the patient's attention may be distracted and some relaxation gained. All sudden movements should be avoided. Steady but constant pressure will sometimes overcome the rigidity. Occasionally a single impulse may be obtained in the following way: The patient is directed to draw a long breath, and at the moment of expiration, as the abdominal walls sink and the diaphragm rises, the hand quickly follows the movement downward into the pelvis, and the particular information wanted may be secured. Quickness of perception comes into play here, as such a manœuvre may be impossible to repeat a second time. But to the educated touch a single impulse may reveal the normal or displaced uterus, the presence of a tumor, or a mass of indurated tissue.

Fat is a second obstacle to the bimanual examination. Where the abdominal walls are very thick, nothing can be felt through them; and there is a second difficulty in these cases, as the examining finger in the



vagina cannot reach so high in the canal, owing to the fact that the perineum cannot be so well pushed up when the nates are large. In such cases, and in fact in any case where it is important to examine carefully the contents of the pelvis, ether should be given to secure full relaxation.

FIG. 20.



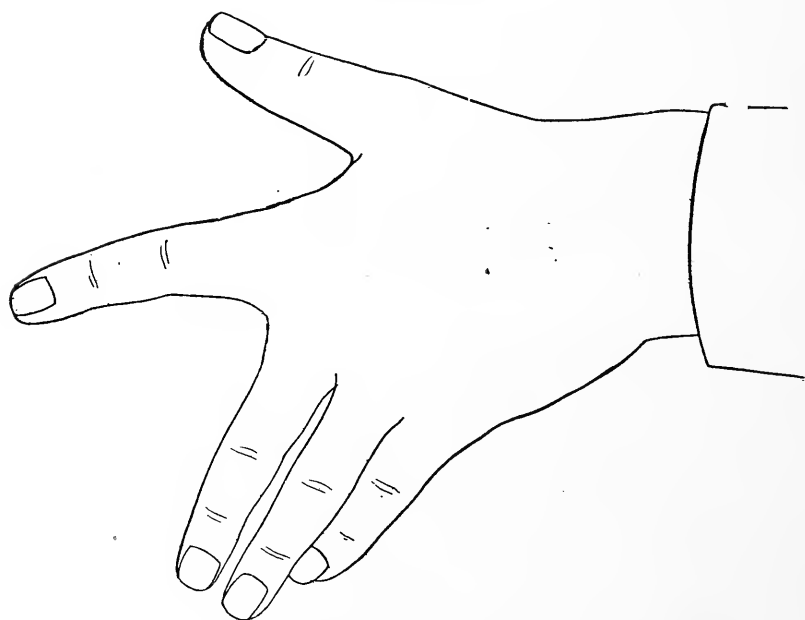
Position of examining finger as usually advised.

With beginners it is a common complaint that in many cases their fingers are not long enough to reach the cervix, much less the posterior cul-de-sac. Much of this comes, of course, from the fact that the touch is not yet educated to distinguish what it is feeling. Nor is the amount of force with which the perineum may be pressed up understood. This difficulty seems to me, however, partly to arise from a faulty method of disposing of the other fingers of the hand. The

main obstacle to reaching high up into the vagina with the examining finger is the rigid perineal body.

This must be pushed up as far as possible. The directions usually given in text-books are that the remaining three fingers of the examining hand should be flexed upon the palm, and the perineum pressed up with the first phalanges (Fig. 20). This, however, represents a broad surface of at least two and a-half

FIG. 21.



Position with fingers extended.

inches each way, which, in a stout woman, would so impinge upon the prominent nates on either side as virtually to prevent the pressing up of the perineum to its fullest extent. If, however, the remaining fingers of the hand are extended along the cleft between the

nates (Fig. 21), the perineum is pressed up by the web between the index and middle fingers and the vagina is materially shortened. Of all the text-books I could consult, Hart and Barbour, and the *Manual of Obstetrics*, by Dr. A. F. A. King, are the only ones which recognize the importance of this arrangement of the fingers.

The most satisfactory bimanual examination is made in cases where the pelvic contents are movable and can be raised from below, and at the same time the abdominal walls depressed. To test the mobility of the uterus the finger of the left hand should be placed beneath, and somewhat behind, the cervix, and with a series of short tilting movements the organ raised to meet the resistance of the hand from above.

In the case of rigid abdominal walls, if the uterus is freely movable, it may be pressed up so as to be appreciated by the hand simply placed firmly over the abdomen. On the other hand, if the uterus is fixed, but the abdominal walls lax, these may be depressed, so as to convey an impulse to the finger resting on the cervix. The examination in these cases, while relatively unsatisfactory, may yet be all that is essential.

The differences that we find on making the bimanual examination when the uterus is in a normal position, or in one of the malpositions, will be more fully treated of when we come to the consideration of the various displacements of the uterus and their treatment.

*Examination of tubes and ovaries and cellular tissue.* Though the uterus is the largest and most prominent organ in the pelvis, it is not by any means the only

one which is liable to be diseased. We should seek to find out, by our bimanual examination, the condition of the tubes and ovaries, and of the cellular tissue surrounding the pelvic viscera. For this purpose the finger should be passed around the cervix, and the presence of anything abnormal noticed. If there is a mass behind the uterus, felt through the posterior cul-de-sac, its differentiation from the body of the uterus, if not satisfactorily determined bimanually, should be made by the passage of the probe, except when contra-indicated, as will be described later. We examine the lateral cul-de-sacs for pathological conditions of the tubes and ovaries and broad ligaments.

*Ovaries.* The normal ovaries are small, almond-shaped bodies, situated on either side of the uterus, from an inch and a-half to two inches distant from it, and a little below the level of its upper surface. When of their normal size, and in their normal position, they are felt in the following way: The left forefinger (for the left ovary) is carried deeply into the left cul-de-sac, while the hand on the outside is placed well down toward the groin of the corresponding side. Both finger and hand are then approximated as nearly as possible at as high a level as the finger inside can reach, and then are together drawn downward, letting the tissues slip between them. If the abdominal walls are sufficiently relaxed and the sense of touch is acute, the small ovary may be felt as an elastic body slipping between the finger and hand. In the majority of cases the normal ovaries can be felt; when the subject of pathological changes, however, their detection is much

easier, as they are larger and usually displaced. Under these circumstances they tend to prolapse, and thus come to lie nearer the uterus, most often at the side, occasionally behind in Douglas's cul-de-sac; very rarely in front, between the bladder and the uterus.

*Tubes.* The tubes, when normal, cannot usually be differentiated from the general mass of more resisting tissues which comprise the broad ligaments. When enlarged, from dropsy or inflammatory processes, their contour may be made out.

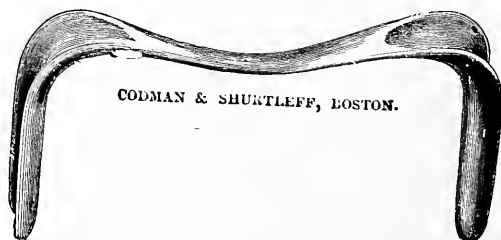
The results of cellulitis and peritonitis are sometimes little more than indefinite thickenings at either side of the uterus, which give a greater sense of resistance to the examining finger.

*Visual inspection.* Before a change of position is made, if the history of the case points to any affection of the vulva, a visual inspection of the parts should be made. This can best be done with the patient on her back. Seated in front of the patient, the labia can be held aside, and the condition of the hymen, perineum, meatus urinarius, vulvo-vaginal glands, etc., be accurately determined. By directing the patient to strain as if at stool, the existence and amount of rectocele, cystocele, and prolapse or procidentia can easily be seen. The thickness and strength of the perineal body can also be best determined with the patient in this position. The forefinger of one hand should be passed into the vagina, that of the other hand into the rectum. The resistance of the sphincter ani can be readily overcome by asking the patient to strain down while the finger is being passed in. The perineal body is then

examined, its thickness and strength being easily determined by the two fingers.

*Examination with speculum.* It is usually important and advisable, after the bimanual examination is finished, to supplement it by an examination with the speculum. While the bimanual examination is by far the most important, and in a fair percentage of cases is all that is absolutely necessary for diagnosis, yet there are certain facts which it is desirable to know, which can only be discovered by the use of instruments. For example, it is exceedingly difficult for the most practised touch to distinguish between a case of moderate laceration of the cervix, and an erosion due to long-standing endocervicitis, a difficulty which the use of the speculum immediately clears up. The size of the womb may be roughly estimated bimanually ; its accurate measurement can only be made by passing the probe. To determine the calibre of the

FIG. 22.



Sims's speculum.

canal, different sized instruments must be passed into the uterine cavity. Again, it is often a wise precaution to verify the position of the uterus as made out by the bimanual examination by the passage of the probe. Such instrumental examination can, I am

confident, be best made with a Sims's speculum, the patient being in the semi-prone position.

*Sims's speculum.* Sims's speculum (Fig. 22) consists of two blades running at right angles to a shank which unites them. The narrower blade is a little wider than the forefinger, and is called the vaginal blade. The other is wider, and is suitable for examining women with capacious vaginæ, or for operating. It is virtually a perineal retractor, and with the patient in the appropriate position, so opens the vulva as to admit air into the vagina, and thus expose to view the upper part of the canal with the cervix.

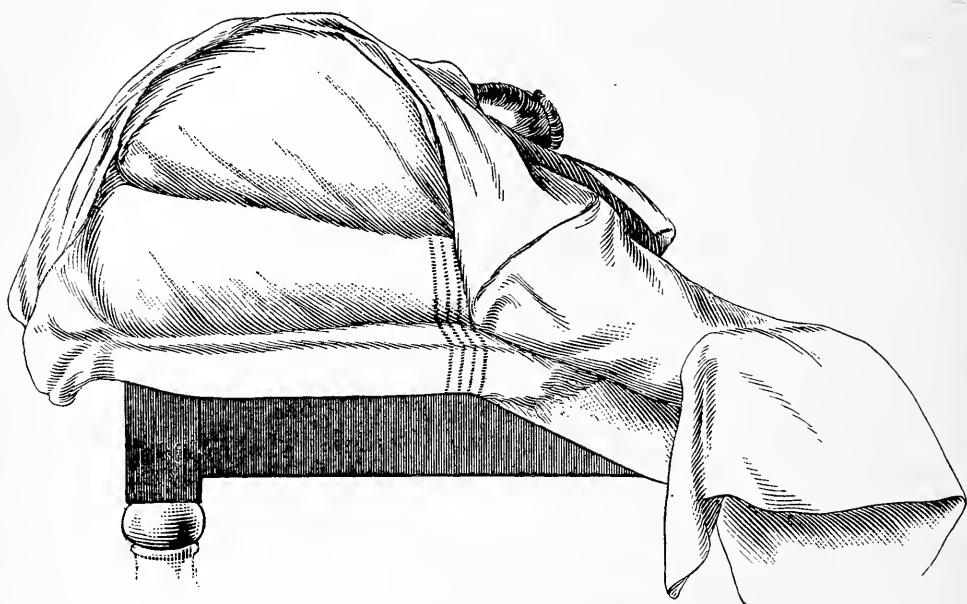
*Semi-prone position.* Not the least part of the suc-

FIG. 23.



Semi prone position.

FIG. 24.



Arrangement of towels.

cess in the use of Sims's speculum depends upon getting the patient into the proper position. The really important points are: patient on the left side, hips at the lower left-hand corner, head and shoulders well over to the other side of the table, left arm thrown behind and hanging over the edge of the table, right shoulder carried over so as to bring the chest nearly flat upon the table, right hip rolled somewhat out of the perpendicular, knees drawn up near the abdomen, right knee bent more than the left, and feet upon the foot-rest (Fig. 23). It is essential that the clothing should be loose about the waist. A single tight band will prevent the falling forward of the abdominal viscera and the distention of the vagina with air, which

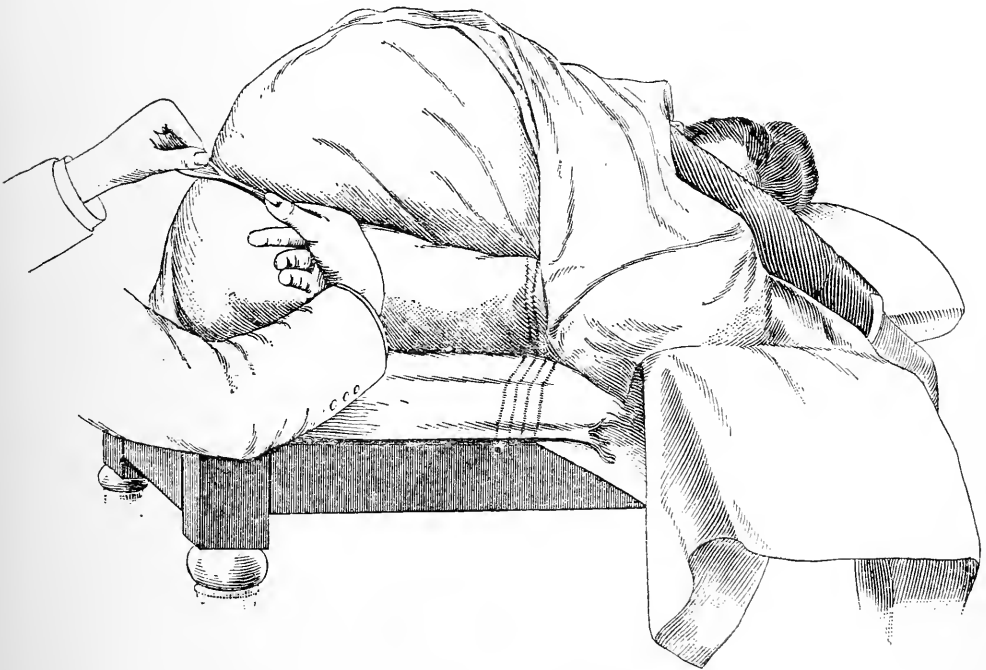


is what is sought to be accomplished with the use of the speculum.

While the patient is being placed in Sims's position she should be covered with the sheet. When in good position the buttocks are to be covered with two towels, so arranged that one shall cover each side, their free edges meeting in the line of the cleft between the nates. Their lower ends are tucked between the legs, the upper borders pinned to some article of clothing. The patient is thus completely covered, and by parting the towels slightly at the vulva the entrance to the vagina may be easily reached (Fig. 24).

*Introduction of speculum.* If all these points are

FIG. 25.



Introduction of speculum.

faithfully insisted upon, and the patient is lying fairly comfortable, as she should, the introduction of the speculum presents no difficulty. Certain precautions should be observed. If the introitus is small, the tip of the forefinger of the right hand should be inserted just within the hymen, and pressed lightly back against the anterior wall, thus shielding the meatus urinarius from being pressed upon by the beak of the speculum. The instrument, which has been previously warmed and oiled, should be taken hold of with the left hand, by the upper blade, the point inserted on the finger, and gradually pressed into the vagina with the thumb of the right hand, keeping it well back against the posterior vaginal wall (Fig. 25). The general direction of the blade is toward the hollow of the sacrum, and not in the axis of the body. When well in position, the speculum should be handed to the nurse, who grasps it firmly by the shank with the right hand, drawing the perineum well back and not pushing the speculum up into the vagina, while she holds up the buttock with the left.

*Illumination.* A north light is best, and daylight is usually sufficient, though in our climate the number of cloudy days makes it almost imperative to use at times some artificial light, which in these days of electric lighting is very easily obtained. The field of vision is usually illuminated by reflection from the polished surface of the speculum, and not by the direct light.

As the anterior vaginal wall is apt to come down into the field of vision and obscure the view of the cer-

vix, it should be held back by a depressor, or, what will often answer just as well, a cotton stick. The operator, by grasping the upper blade of the speculum, can so change the direction of the blade inside, as to bring any part of the vaginal vault he wishes into view.

By the aid of the speculum we are able to see the condition of the various parts of the vagina, and the cervix, to note the existence and character of any vaginal or uterine discharge, to pass instruments, to determine the depth, direction and calibre of the uterine canal, and carry out almost all forms of treatment.

*Advantages of Sims's speculum.* The obvious advantages of the Sim's speculum are its ease of introduction, freedom from pain in its use, good view of the cervix and upper part of vagina in their natural position, and the large space it gives at the outlet, where it is most needed for the manipulation of instruments.

As regards its ease of introduction, if it is remembered that it is really only a perineal retractor, and if in passing it in, the blade is made to hug the posterior vaginal wall, it will slip into place with amazing facility. The freedom from pain in its use especially recommends it in the case of unmarried women. Even where the hymen is present, it is usually found to be so distensible and yielding as to admit the forefinger without tearing. Where the finger can go, the smaller, so-called virginal, blade of the speculum can pass without causing undue pain, an advantage which no other speculum possesses. The third advantage is a very obvious one. A perfect view is obtained of every part

of the vagina except the posterior wall, and this may be thoroughly looked over as the speculum is withdrawn. Other specula show only very small portions of the whole field, and those often so distorted that their true appearance and relations to surrounding parts are not apprehended.

The last advantage, that of giving room for the manipulation of instruments, is a very important one. Its value is recognized in the fact that operating must be done with this speculum or with one constructed on this principle. So, too, the proper and satisfactory use of instruments for diagnosis is none the less dependent upon plenty of space at the outlet. Whoever has had to pass a probe into an anteflexed uterus will have appreciated the importance of a large amount of room in which to manipulate.

*Disadvantages of Sims's speculum.* The most weighty objection to Sims's speculum is the fact that it is usually necessary to have an assistant to hold it, in order to make a thoroughly satisfactory examination. This objection, of course, has no weight in the case of a specialist with a considerable office practice. Here the presence of an assistant is a direct advantage, both in the way of its being a comfort and aid to the patient, and also because it is a protection to the physician. The difficulty becomes apparent when an occasional examination has to be made. If the patient makes an appointment beforehand, or is seen at her own home, the presence of some third person can usually be secured who can render the necessary assistance. It is, however, surprising how much can

be done with Sims's speculum when the physician has no assistant. The patient can be directed to hold up the right buttock with the right hand, and many of the simpler manipulations and forms of treatment can be carried out successfully. For the more difficult and nicer work an assistant is essential, and if one cannot be secured, some other form of speculum must be used.

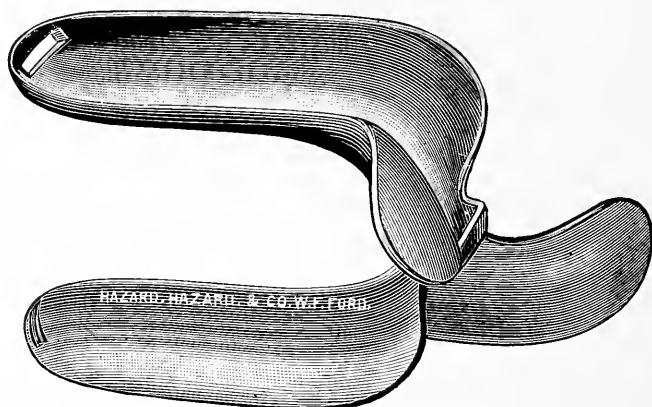
*Self-retaining specula.* Recognizing the value of Sims's speculum, and appreciating this objection to its general use, there have been a large number of self-retaining specula, embodying this principle, devised by physicians. Most of them have proved of little practical value, either because of their complexity or high price, or because, being attached to the table, the slightest movement of the patient disarranges the whole apparatus.

*Cleveland's speculum.* Dr. C. Cleveland, of New York, has devised a self-retaining speculum which is not open to these objections. It is simple, cheap and so attached to the patient that her movements are no more likely to throw the vaginal blade out of place than if the nurse held it.

To quote the author's description of it, "It consists of two Sims's blades, each with a flange, and separated by an interval of one inch and three-fourths (Fig. 26). These, though in parallel planes looking at them from the side, will be seen to be at a slight angle to each other when held with the concavity of either toward the observer, the nearer blade deflected to the right, and the farther one to the left. At the point of each

blade is a fenestra, and at the bend of the instrument, where the two blades come together, is a narrow metal band. To complete the instrument, there is a belt of

FIG. 26.



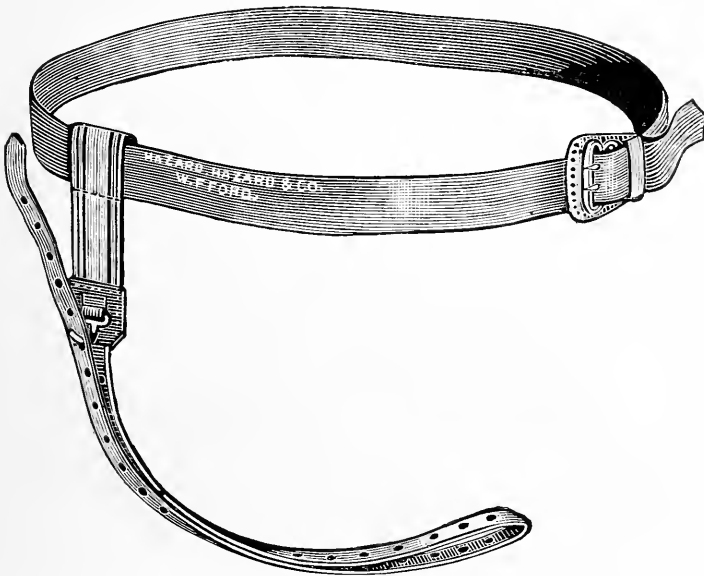
Cleveland's self-retaining speculum.

webbed material, to be applied about the waist. On this is looped, to admit of its being moved readily to any position upon the belt, a piece of the same material. To this is attached a long leather strap with oblong perforations placed at intervals of half an inch. At the point where this strap and the piece of belting are joined, there is a hook (Fig. 27).

“To apply the instrument, the belt is first buckled by the patient, not tightly, about her waist, and outside her clothing, with the attached strap behind and the hook turned outward. She is then placed in the Sims's position. The operator selects the blade he thinks best suited to the case, and holding the instrument with the right hand, with the left he passes the

leather strap through the fenestra at the point of the other blade, and then under the metal band, leaving the strap quite loose between them. Then, holding the speculum still with the right hand, with the index finger extended along the concavity of the blade, it is introduced, care being taken to pass it back of the cervix. The instrument is then pushed firmly up against the perineum, the outer blade reaching a point just at the bend of the coccyx. In very thin women

FIG. 27.



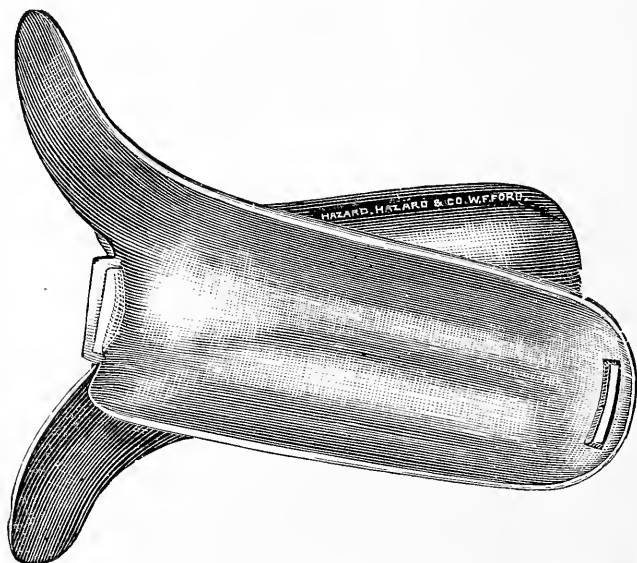
Belt and perineal strap for Cleveland's self-retaining speculum.

it may be necessary to place a folded towel under the external blade. The next step is to draw the leather strap tight, first through the fenestra, and then under the metal band. The perineum is then retracted to

the required degree by drawing the strap backward and securing it to the hook provided for the purpose. By now using the vaginal depressor, the cervix is brought at once into view."

The object of having the blades placed at an angle to each other is, that the blade in the vagina is tilted downward, thus accomplishing what the nurse does

FIG. 28.



Cleveland's self-retaining speculum.

who draws backward and a little upward (Fig. 28). The advantages which the author claims for it are its simplicity, that it can be easily kept clean, and that it is cheap, not costing probably more than three dollars or three dollars and a-half.

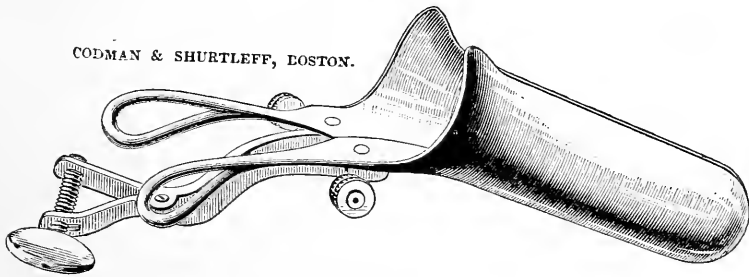
*Bivalve speculum.* The next best form of speculum, adapted more for simple treatment to the cervix or



vagina than for diagnosis, is the bivalve. There are numerous varieties, and one should be chosen which expands at the base, thus giving room at the outlet, where it is needed.

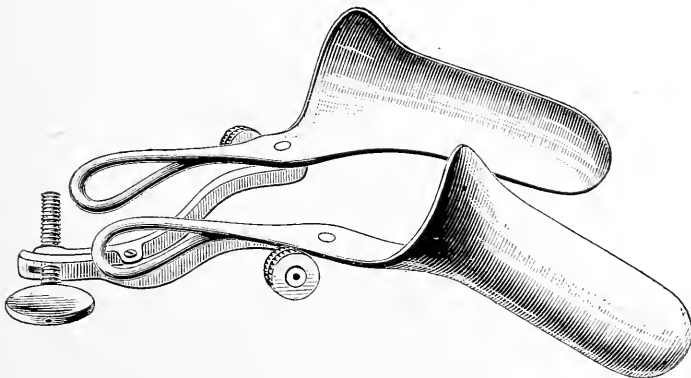
*Goodell's speculum.* Dr. Goodell's (Figs. 29 and 30) is also a very satisfactory form of speculum, and the method of using it may be given in his own words:<sup>1</sup> "The bivalve speculum is preferably intro-

FIG. 29.



Goodell's bivalve speculum (shut).

FIG. 30.

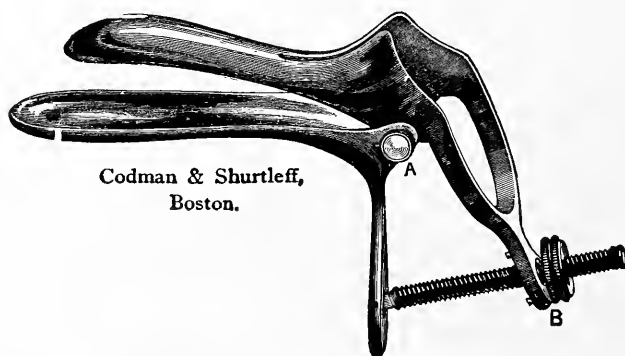


Goodell's bivalve speculum (open).

<sup>1</sup> Goodell's Lessons in Gynecology, third edition, p. 28.

duced with the woman in the dorsal position. The labia are separated by two fingers, which are passed just within the vulva. The bevelled tip of the speculum is then pressed downward on the edge of the perineum, and guided in through the interval between them, toward that portion of the vagina where the cervix has previously been found to lie. The handles being next turned toward the left thigh, the blades are then opened, and, as soon as the os comes into view, are fixed by the screw on each side. Should more space or working room be needed, the large screw at the end of the handles will still further open the blades." Another very good bivalve speculum is Brewer's (Fig. 31).

FIG. 31.



Brewer's speculum.

The rules for the use of other instruments for diagnosis, as the probe or sound, will be fully given when we come to the consideration of the pathological conditions which necessitate their employment.

*Examination per rectum or bladder.* Besides the bimanual method, and that by means of the speculum,

it is often necessary, in obscure cases, to use other methods. By means of the bladder and rectum it is possible to gain light on the relations of the pelvic viscera. In the case of a virgin with a tight hymen the examination should, if possible, be made per rectum. It will necessarily be imperfect, but a backward displacement, and some other possible conditions, may be made out in this way. In cases of absence of the vagina, or atresia of the lower part of the canal, one or two fingers of one hand in the rectum, and a sound passed into the bladder, will map out what lies between in a satisfactory way. The urethra may exceptionally be gradually dilated to a size sufficient to admit the finger without producing anything more than temporary incontinence, but this is rarely necessary.

The ordinary methods of examining the abdomen from the outside, mensuration, percussion and auscultation, are of so general application in all diseases of the abdomen that they do not need mention here.

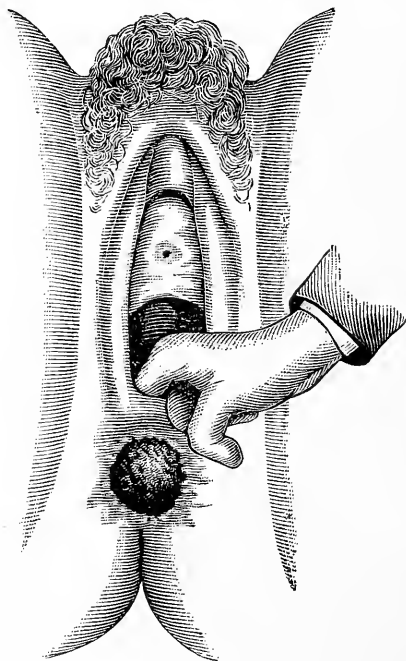
The examination in the genu-pectoral position, useful in replacing the retroverted or flexed uterus, and in carrying out certain treatment, will be described when treating of displacements.

*Examination in the upright position.* In cases of slight prolapse from relaxation of the uterine ligaments the amount of such falling is often a difficult matter to decide from the examination in the dorsal position. In such cases the patient should be examined in the upright position. She should be directed to stand up and place the feet slightly apart, and the physician, kneeling on one knee in front of her, should

pass the index finger of the left hand into the vagina and judge of the position of the uterus, both cervix and body. She should then be directed to strain down, so that any undue mobility may be noticed.

*Examination of the rectum.* To examine the very lowest part of the rectum the best method is by everting it from the vagina. This has been fully described

FIG. 32.



Digital eversion of the rectum (Mundé).

by Mundé in his *Minor Gynecology*.<sup>1</sup> He says : " A simple, rapid and comparatively painless method of exposing to view the lower two or three inches of the

<sup>1</sup> Mundé : *Minor Surgical Gynecology*, 2d ed., p. 62.

rectal mucous membrane is to introduce one or two fingers into the vagina when the patient is on her side, and attempt to press the tips of these fingers out of the anus. In this manner the mucous membrane of a portion of the anterior wall of the rectum and the edge of the sphincter become visible, and a fissure, ulcer, hemorrhoid or a catarrhal hyperæmia of the mucosa are readily detected" (Fig. 32).

A satisfactory examination of the rectum can be made with Sims's speculum. For this purpose the table should be brought near the window or reflector, so that the light will be thrown more directly downward. The patient should be placed in an exaggerated Sims's position by having a pillow placed under the left hip so as to raise it, and throw the patient more over on her stomach. The speculum (small blade) is then inserted into the anus, and drawn backward toward the coccyx. By this manœuvre air enters, and the whole lower portion of the canal may be easily seen, and any necessary treatment applied.

*General considerations.* There is a question which at some time confronts every physician in general practice and often assumes a great deal of importance, and that is, In what cases is it advisable to make a physical examination, and in what cases is it wisest to refrain? No one would contend that all cases which complain of symptoms referable to the genital organs should be examined, but where to insist upon it, and where not to, is not so easy to decide. The doubtful cases are, of course, in the main, young unmarried women and the deciding points should be the obscurity

and severity of the symptoms. In the case of women who are or have been married, very little should be left to chance. If there is any reasonable ground to suppose that the patient's condition is due to, or aggravated by, something wrong in the pelvis an examination should be strongly urged. A hundred superfluous examinations are better than one case neglected. How often does the dread on the part of the patient, and the delay on the part of the physician, result, in beginning malignant cases, in the favorable moment for operating being lost!

*Examination of young girls.* It is different with young girls. Here an examination should be avoided, if possible. The disorders which unmarried women under twenty are particularly liable to are, in the first place, menstrual disorders, then displacements, and third, inflammatory affections. As regards the first class of cases probably the majority need not be examined. General tonic and hygienic treatment will very often suffice to correct such troubles.

Displacements and inflammations call more often for a vaginal examination, and treatment to be effectual must usually combine local with general measures.

If the examination is unavoidable in a young girl it should be made as delicately as possible. It is often better to administer ether, both for the sake of sparing the patient's feelings, as well as for the reason that with an intact hymen the mere entrance of the finger is very painful, and the examination cannot be thoroughly and satisfactorily made. Avoid rupturing the hymen if that is possible. The examination by the

rectum, though in general not satisfactory, may in a few cases give the information sought for, and be all that is necessary.

A patient should not, if it is possible to avoid it, be examined when she is unwell, and fortunately it is rarely necessary. Occasionally, when hemorrhage is a prominent and constant symptom, the cause must be sought for even though the patient is flowing. In such cases make the examination as brief and simple as possible.

## CHAPTER IV.

### DISEASES OF THE VULVA.

IN this chapter I propose to treat of the diseases of the external genital organs, or, as they are collectively termed, the vulva.

*Vulvitis.* This affection occurs occasionally in young children, the result probably of a want of cleanliness, or, rarely, from injury due to an attempt at rape. It is more prone to attack children of a strumous diathesis, and in these it may become chronic. The symptoms are redness, itching, and later burning, especially on micturition, swelling and a purulent discharge. These may be so severe as to make walking difficult, and to necessitate the child's lying in bed, with thighs widely separated.

In women, vulvitis most frequently follows parturition, though it is only exceptionally that the symptoms attain any great severity. It more often is the result of some irritating discharge from the vagina, and is hence an accompaniment of acute vaginitis, particularly when of gonorrhœal origin. It may be caused by scratching or rubbing to relieve pruritus.

The treatment consists in soothing and mildly astringent applications to the inflamed surfaces. A favorite wash is a one or two per cent. solution of acetate of lead, and it is best applied on a strip of linen cloth, which should be placed between the labia, so as



to separate the surfaces. The parts should be frequently bathed, and the secretions, which are sometimes difficult to reach between the swollen labia, should be syringed off with a stream of warm water. When excoriations occur, insufflations of aristol will be of use.

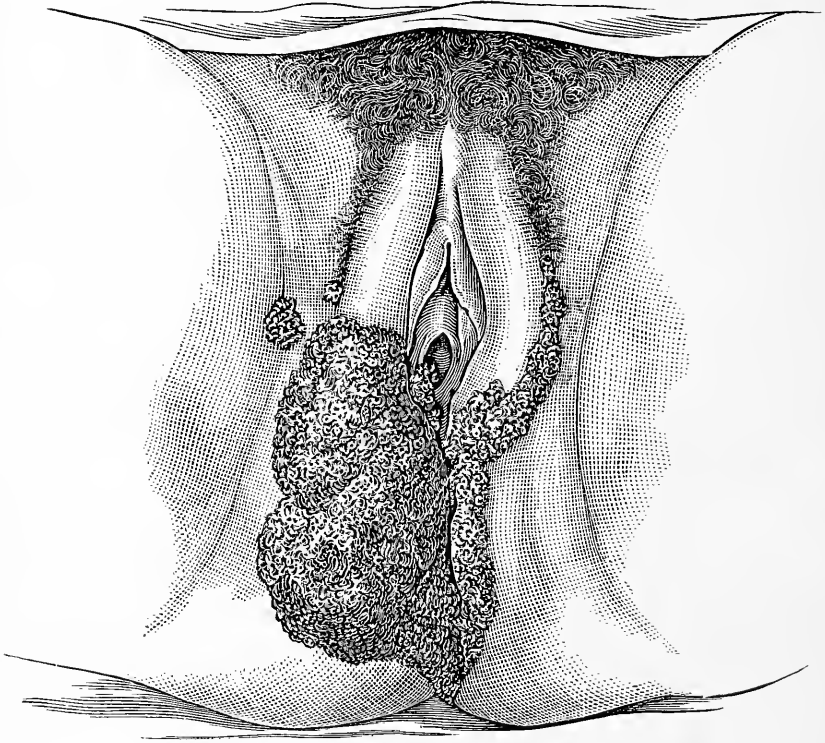
*Eruptive diseases of the vulva.* There are several forms of skin disease which not infrequently occur on the external female genitals. They are eczema, herpes, lupus, occasionally prurigo, and a few others much more rarely. Their course and treatment are the same here as when they occur in other parts of the body, and they are merely mentioned in this connection to emphasize the possibility of their occurrence, and to warn against these simpler skin affections being confounded with the lesions due to venereal affections.

*Condylomata*, or so-called venereal warts, are small growths which appear on the vulva. They start as little elevations on the mucous membrane, scattered at intervals over its surface, and form little reddish colored masses attached by a small base to the underlying surface. They are either single or branched, in which latter case they may attain considerable size and are of a cauliflower-like appearance (Fig. 33).

They may be sparsely scattered here and there, or, under favorable conditions, may cover a large portion of the vulva and even spread to the surrounding tissues. Their growth is favored by heat and moisture and hence they are more likely to appear where there is an increased blood supply to the parts. Pregnancy, therefore, is a favorable time for their growth. Al-

though spoken of as venereal warts they may have nothing to do with venereal diseases. Lack of cleanliness is one of the predisposing causes and they are

FIG. 33.



Condylomata of Vulva (Farnier).

also more apt to appear in fat persons. When they grow luxuriantly they attain considerable size and the divisions between the papillæ are bathed in a thin secretion which gives off a disagreeable odor. They give rise to itching, burning, and a general feeling of discomfort, but otherwise do not cause symptoms. The treatment for this condition is their removal by

means of scissors and touching the base with some caustic. This can usually be done without ether. If there are a great many growths, a few should be treated at a sitting. Bleeding is slight and is usually controlled by the caustic used after they are snipped off. This may be a solution of nitrate of silver, thirty grains to the ounce, or *Liquor Ferri Chloridi*. If they occur during pregnancy, they should be removed before labor inasmuch as their presence might cause *ophthalmia neonatorum*. Where this slight operation is not deemed advisable, their removal may be attempted by means of a solution of chromic acid, one part, to four of water, painted on at frequent intervals. Under this application they tend to dry up and disappear.

*Vaginismus*. This affection was first described by Marion Sims, and the name *vaginismus* given to it. It is a condition of extreme hyperæsthesia of the vulva and introitus vaginæ. This may vary in intensity from the mild condition where intercourse or the introduction of the finger is painful, but not impossible, to so aggravated a state that the lightest touch provokes the most painful cramps. In such cases intercourse is, of course, impossible.

*Vaginismus*, in the strictest sense of the word, should be limited to those cases where no cause for the trouble can be found, in other words, where it is a neurosis.

But the name has also been applied to those cases where there are conditions of the vulva or adjacent parts which may cause painful contractions, such as

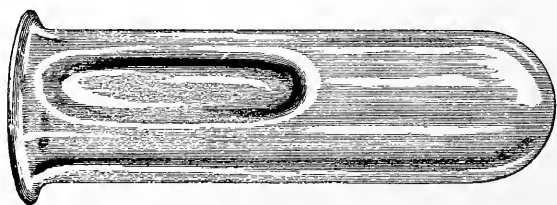
urethral caruncle, or fissures of the hymen, or vaginitis. The removal of the cause will relieve the dyspareunia.

The treatment of this extremely painful and obstinate affection must be mainly local. General measures and internal treatment must be limited to building up the generally depressed nervous tone and quieting the nervous excitability.

Our main reliance must be upon diminishing the sensitiveness by local treatment. Even in the mild cases little can be expected from any but the most radical measures. Applications of astringents, or of local anæsthetics, such as cocaine, rarely accomplish any good at all.

The best plan to pursue in the less severe cases is forcible dilatation under ether. The patient after being thoroughly anæsthetized, is placed in the dorsal position with the thighs flexed on the body. The two thumbs are then inserted into the vulva, and are

FIG. 34.



CODMAN & SHURTLEFF, BOSTON.

Glass Plug for Vaginismus.

separated as widely as possible until the muscular fibres of the sphincter vaginæ are felt to give way. Considerable force has to be used to stretch the parts

sufficiently. A glass plug (Fig. 34) should then be inserted, to be worn constantly at first, being removed only when it is necessary to defecate or urinate. Later, the plug may be removed for a short time, increasing this as the parts become more tolerant, until it is worn only for an hour or two each day, and, finally, dispensed with altogether. Intercourse should be deferred until the cure is definitely made, as the introduction of the penis is more likely than anything else to evoke the spasm.

Should forcible stretching under ether be unsuccessful, the more radical and serious operation proposed by Sims, of removing the hymen with a strip of adjacent mucous membrane, should be resorted to. The after-treatment with glass plugs should be systematically followed out to insure the success of the operation.

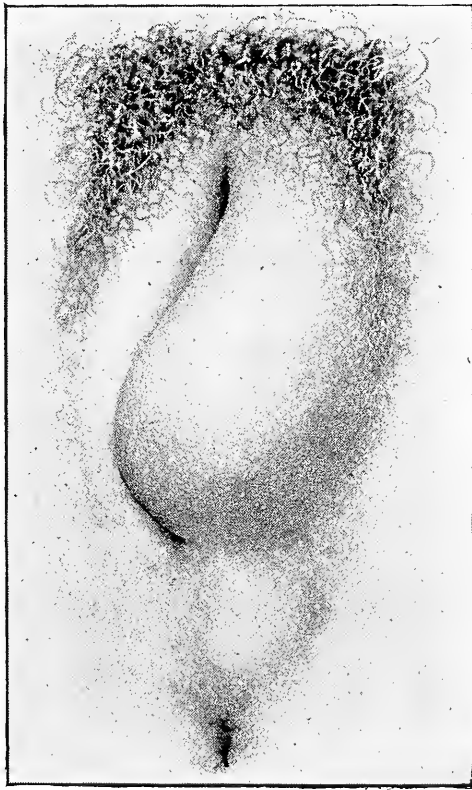
A method of treatment for this obstinate affection which has recently been advocated, and promises good results, is the use of the galvanic current. A mild current applied with one pole on the perineum, the other gently rubbed over the sensitive parts, at intervals of a day or two, has in a comparatively short time been followed by cure.

*Affections of the vulvo-vaginal glands.* The vulvo-vaginal glands, or the glands of Bartholini, are small oval bodies situated on each side near the lower margin of the vaginal orifice. The ducts leading to the glands are about half an inch in length and open just in front of the base of the hymen near its middle. These glands are liable to become the seat of trouble

in two ways : either from an occlusion of the excretory duct, and consequent retention of the natural secretion, constituting a so-called cyst of the gland, or from an inflammatory process extending along the duct, and occlusion following, the gland itself becoming inflamed and secreting pus, and forming an abscess.

Occasionally a cyst may exist for a long time, and then from some cause, traumatic or otherwise, the contents become purulent, and an abscess results. Other cases swell, and after a lapse of time the con-

FIG. 35.



Abscess of the Vulvo-vaginal Gland (Thomas and Mundé).

tents are either absorbed or are spontaneously evacuated.

In either case the prominent symptom is a small circumscribed swelling, usually not larger than an English walnut ; if a simple cyst, not especially painful, but uncomfortable and annoying from its presence ; if an abscess, quite painful, interfering with locomotion, and pressed upon so as to cause pain with almost every movement of the body (Fig. 35).

It may be readily detected, if on the right side, by passing the right forefinger just inside the vagina and palpating the lower part of the labium between it and the thumb, or if on the left side, with the left forefinger and thumb.

*Causes of cyst and abscess.* The special exciting cause of the occurrence of a cyst is not clear. There seems to be a predisposition in the case of some women to the formation of these tumors, as they may occur three or four times at intervals, either on the same side or on opposite sides. In some cases they discharge spontaneously, presumably through the natural duct ; in other cases they are opened, but refill. The occurrence of an abscess is more often due to gonorrhœa than to any other one cause, though they may occur entirely independently of any specific disease. They may develop slowly, and, where this is the case, are very probably at first simple cysts, the contents of which later become purulent ; or they quickly take on active inflammation, and in the course of a few days become large and painful, and, if not opened, burst spontaneously. As a rule, the cysts

are of much slower development than the abscesses, and are much less painful. In fact, they may exist for a very long time without causing any inconvenience whatever.

*Treatment.* The treatment for both conditions is the same, viz.: emptying the sac by incision. This slight operation is rarely painful enough to require ether. The incision should be made on the inner surface of the labium near the margin of the hymen, a point which, in fact, corresponds to the natural position of the duct. In a certain proportion of cases—probably the majority—the sac does not refill. In others the affection tends to recur, and special treatment to prevent it is necessary. My rule is, if the contents of the cyst are purulent, after thoroughly evacuating it, to pack the cavity with cotton soaked in some irritating substance, like iodine or liquor ferri subsulphatis, to prevent its healing and make it granulate from the bottom. This should be renewed every other day until there is no longer any cavity to pack. There will be considerable inflammatory reaction for a few days, and the patient had better be kept moderately quiet.

*Pruritus vulvæ.* This is a symptom for which the physician is often consulted, and which in not a few cases he will find very stubborn. It may vary in intensity from a slight discomfort to such violent itching that the sufferer tears at herself until the parts are raw, shuns society, and is rendered utterly miserable. The troublesome symptom is more apt to come on at night, especially after getting warm in bed.



*Due to irritating discharge.* The most common cause is undoubtedly the presence of an irritating discharge from cervix or vagina. . In these cases the itching is quite apt to be somewhat inside the vagina, as well as on the outside—a troublesome variety, inasmuch as the parts not being so well within reach, the relief afforded by scratching is only partially attained, and the nervousness is increased. As a rule, the pruritus from this cause is not of the intensest type, and as the cause can be definitely known and the appropriate remedies applied, its duration is apt to be limited. Diabetic urine will give rise to the most annoying itching, and in the absence of other causes the examination of the urine for sugar should not be neglected.

The treatment consists in checking the irritating discharge, whether from cervix or vagina, by the methods described when speaking of endocervicitis and vaginitis, viz., hot-water injections, simple or medicated, applications to cervical canal or vagina and packing.

To allay the intense itching, all sorts of local applications have been recommended in the form of ointments, washes and powders, which it would be impossible to enumerate. It is often necessary to try a number in rapid succession before the happy remedy or combination of remedies is hit upon. Each one's own ingenuity will suggest various substances to try. I will merely indicate a few of the more successful ones in my hands. Frequent bathing of the parts with *hot* water, or with a one or two per cent. solution of carbolic acid, or with the following combination :

R. Acidi carbolici,	I.
Glycerinæ,	10.
Aquæ calcis,	100. M.

has been in many cases followed by the happiest results. Of ointments, the benzoated oxide of zinc, and one consisting of one part calomel to twenty-five of simple ointment, have been most successful. Powders will sometimes succeed when washes and ointments have failed. The best of these are bismuth, or the oleates of zinc or ichthyol.

*Due to misplacement.* A second cause of pruritus which I have occasionally met with, has been an interference with the circulation from some misplacement of uterus or vaginal walls. In these cases such malposition has been the only local cause found, and its correction has been followed by improvement or cure. This has seemed to me analogous to the pruritus ani which we find associated with hemorrhoids, or, at least, a congested state of the lower rectum. The adjustment of a proper support has in not a few cases been followed by the happiest results. In this class may be included those cases which occur in pregnancy, where the itching is often a most troublesome complication, and for which unfortunately very little can be done.

*Neurosis.* There is, however, a considerable number of cases in which we find no local difficulty to account for the symptom, and are forced to look upon it as a neurosis. These cases are usually stubborn, and are apt to occur in women of a nervous diathesis. The effect upon the nervous system is much more

profound than in the cases previously considered, and the *morale* of the patient suffers. It is among these patients that we find that the constant rubbing and itching lead to masturbation—a habit which may, to be sure, be developed as the result of any form of pruritus, but which is more often found in those of purely nervous origin.

In the treatment of these latter cases, general tonic measures, directed especially to the nervous system, with particular attention to the patient's mode of life in the way of securing agreeable and healthful occupation, and inducing her to live a robust sort of life instead of a luxurious, enervating one, will be found to be of equal if not greater importance than local treatment. Nerve sedatives like bromide and valerian should be tried and are sometimes of value.

Galvanism has been recommended for this trouble, applied in the same way as described for vaginismus.

*Urethral caruncle.* Urethral caruncle is a small, sensitive growth situated at the mouth of the urethra. It is, pathologically speaking, an angioma, consisting of dilated blood vessels and supplied with extremely sensitive nerve filaments. It is situated at the edge of the urethral mucous membrane, usually on the lower side, is slightly elevated above the surface, having a granulated appearance, and is of a deep, red color. It may be of any size from that of the head of a pin to that of a pea.

*Causation.* The cause of these growths is obscure, yet it seems probable than any condition which is ac-

accompanied by chronic congestion of the parts, or any prolonged irritation would favor their occurrence.

The one cardinal symptom of urethral caruncle is pain especially on micturition. The pain is felt as soon as the urine begins to flow and is intense during the whole time; it is often so severe that the patient holds her water as long as possible and screams with agony when she is obliged to pass it. There is also pain from friction of the clothing, or of the adjacent parts. On examining, we find a small, bright red tumor situated as before described, which is extremely sensitive to the touch. It is to be differentiated from prolapse of the urethral mucous membrane and urethral polypus. Prolapse of the membrane differs in that it is not as sensitive to the touch, has not the bright red color, is not so granular in appearance and is not pedunculated. Urethral polypus is non-sensitive, has a longer pedicle and is usually attached higher up in the urethra. The treatment for this affection is excision. Ether is advisable and the growth may be either snipped off with scissors or burned with caustic. If it is snipped off, it is advisable, in order to avoid recurrence, to touch the base with the actual cautery. There may be a little free hemorrhage, which is controlled by a T bandage. Should such hemorrhage persist, a single stitch will check it.

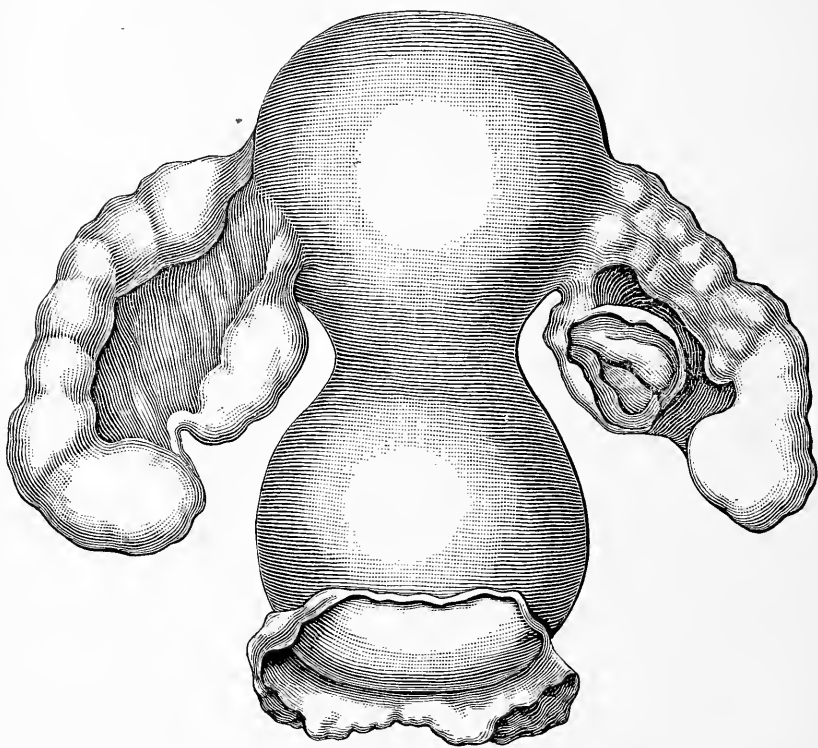
## CHAPTER V.

### DISEASES OF THE VAGINA.

*Atresia of the hymen.* In speaking of the development of the genital organs, mention was made of that malformation which results in atresia of the hymen. The hymen represents the line of separation between the organs which are collectively called the vulva, and the vagina. It is not simply a projection of the mucous membrane, but is a real narrowing of the vagina itself at its lowest extremity. Normally there is an opening, which may vary considerably in shape and position, but occasionally we have an imperforate membrane. This condition will rarely be discovered until the onset of puberty ; then, at the time when the monthly sickness should appear, it remains absent, and, after a time, there will develop monthly attacks of pain, but unaccompanied by any flow. Where a patient has passed the age at which menstruation may be looked for, and has not menstruated and suffers at regular intervals with increasing severity, suspicion is excited that a condition of this kind may be present. It is wise under these circumstances to make sufficient examination to determine if this malformation exists. On inspection of the vulva we find the entrance to the vagina covered with a solid membrane, which varies in color according to the amount of pressure behind it. If menstruation has gone on for a long time, and

the blood has accumulated during month after month, the result will be in the first place a dilatation of the vagina; secondarily, of the uterus and exceptionally a backing up into the tubes as well (Fig. 36).

FIG. 36.



Results of Atresia of the Hymen. Dilated Vagina, Uterus and Tubes.

Where the vagina is distended we have a bulging of the imperforate hymen, and it has a bluish tinge, the result of the dark blood seen through the thin and stretched tissue.

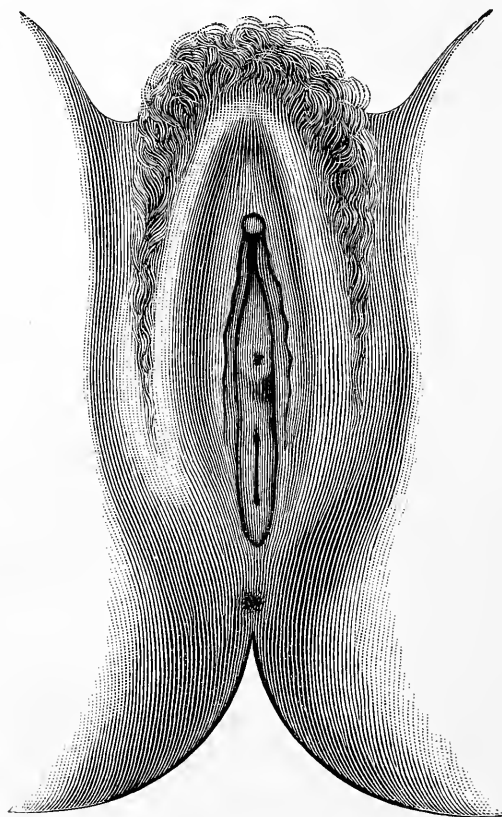
The relief in this condition is simple. An incision is made in the bulging membrane and the retained con-

tents are allowed to flow out. If there is a large amount of retained menstrual blood it is wise not to attempt its evacuation hurriedly for fear that, owing to the sudden collapse and consequent contraction of the uterus, the blood may be forced through the Fallopian tubes into the peritoneal cavity. For the same reason no thorough douching should be attempted until the retained menstrual secretion has gradually made its way out, which may not be for a day or two. The vagina should then be washed out with antiseptic douches and the mucous membrane, which is usually altered in character owing to the great pressure, will gradually become normal.

*Malformations of the vagina.* Absence of the vagina is occasionally met with, and may or may not be associated with absence of the uterus as well. If there is a uterus, and if there are signs which point to an attempt at menstruation with possible slight accumulation of menstrual blood, an attempt should be made to form a vagina artificially by separation of the tissues between the bladder and rectum. Such a vagina is difficult to form and more difficult to keep patulous, so that it is apt to be very unsatisfactory. If, therefore, on examination no trace of a uterus is found, it is best to leave the patient in the condition she is. Sometimes we find a vagina which is only partially pervious. There may be a partial atresia, or, more properly speaking, a stenosis, and if such exists, it is apt to be in the upper part of the vagina; exceptionally it is found in the lower part. A more frequent occurrence is the presence of a crescentic shaped pro-

jection of the wall of the vagina, constituting a more or less complete stenosis, which is most often found in the upper part of the vagina. If complete atresia exists it should be remedied by operation ; if a partial

FIG. 37.



Case of Double Vagina and Uterus. External Appearance.

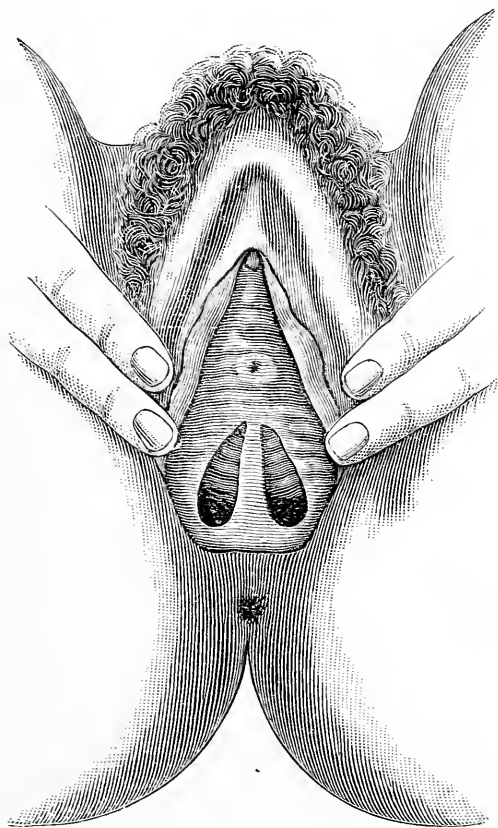
band is present and is not giving rise to symptoms it may be left until either marriage or childbirth make it wise to interfere.

The vagina is formed, it will be remembered, by the



fusion of the ducts of Müller. If these fail to coalesce, either wholly or in part, there will result, in the one case, a double vagina (Figs. 37-39); in the other, a more

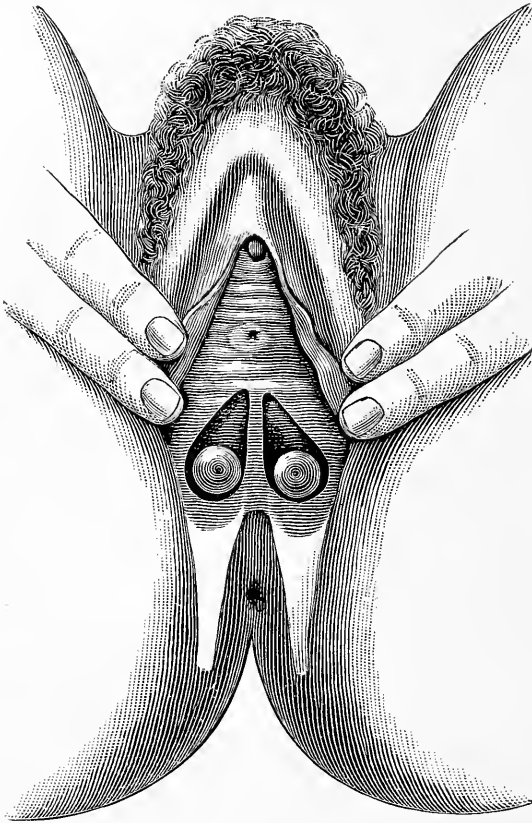
FIG. 38.



Case of Double Vagina and Uterus. Labia Separated.

or less complete septum. Where this condition is recognized, it may be remedied by operation, the septum being removed and the resulting wound in the vaginal mucous membrane stitched with catgut sutures.

FIG. 39.



Case of Double Vagina and Uterus with Speculum in each Vagina.

*Vaginitis.* Inflammatory affections of the vagina may be either acute or chronic. By far the most common cause of acute vaginitis is gonorrhœa. The symptoms are a sense of heat and irritation in the vagina, sometimes itching, especially just within the introitus, swelling and redness of the mucous membrane, and the presence of considerable leucorrhœal discharge. Accompanying these symptoms there is often an increased frequency of micturition, and pain

accompanying the act. This latter symptom is said to be pathognomonic of the gonorrhœal origin of the vaginitis, and when taken in connection with a clear history of exposure, and the above train of symptoms following in due order of time and sequence, it is very conclusive. Other causes are irritating discharges from the uterus, especially associated with the puerperal state, mechanical irritation from too stimulating applications or injections, from pessaries, or from too frequent coitus, and various general affections such as the exanthemata. The discharge in acute vaginitis is at first whitish, speedily becoming yellowish, and in severe cases greenish. It is at first thin, but grows thicker as it becomes more purulent, and resembles cream in color and consistency. It is not as ropy and tenacious as the discharge from the cervix, but is somewhat viscid. From its profuseness it is very apt to glue the hairs of the vulva together in spite of ordinary attempts at cleanliness.

The vagina feels hot to the examining finger, and the simple digital examination causes pain, as does the introduction of the speculum.

Fortunately, the cause of the vaginitis does not affect the treatment to be pursued. Whatever be the exciting cause, the line of treatment is essentially the same.

*Importance of treatment.* It is to be borne in mind, in the treatment of vaginitis, especially of gonorrhœal origin, that the vagina being lined with pavement epithelium, and possessing relatively few glands, is more nearly allied to the external skin than to a

mucous membrane. A vaginitis tends to run a light and short course compared with a urethritis in the male, and would, in itself, be of comparatively little importance were it not for the following reasons: In the first place, the surface of the vagina being thrown into folds and rugæ, any treatment by injections or applications, given in the ordinary way, is apt to reach only the summits of the ridges, leaving the parts between the rugæ untouched. Hence the disease holds on in parts of the vagina. There are certain localities which are less easy to be reached than others, where the last vestiges are apt to remain and become obstinate. One is the posterior cul-de-sac, then the lower part of the anterior wall, where the rugæ are especially prominent, and, lastly, two little pouches, one on each side, just back of the hymen and in front of the attachment to the pubic arch.

The second reason why a specific vaginitis is not to be regarded lightly is the liability and tendency for the inflammatory condition to extend along the cervical and uterine mucous membrane into the tubes, and even to the peritoneal membrane in the immediate vicinity. The gravity of this sequence of events can hardly be overestimated. Many a woman has been doomed to a life of invalidism by a long series of inflammatory processes which had their origin in a vaginitis. For these reasons the prompt and persistent treatment of the initial lesion is extremely important.

*Treatment.* The principal reliance is naturally to be placed on topical applications to the diseased surface.

These may be made by means of medicated suppositories, substances applied on cotton either in the form of a tampon or applied directly to the mucous surface with a cotton-stick, or by injection either of simple water or some solution. For the majority of cases the latter is the best method. If taken properly they bring every part of the mucous membrane into direct contact with the remedial agent, and thus prevent the disease lingering in the folds and cul-de-sacs.

To attain this result on the pelvic circulation three conditions are necessary : the water must be hot ; it must be thoroughly brought in contact with the mucous membrane of the whole vagina, and the application must be a prolonged one.

The temperature of the water should be between  $110^{\circ}$  and  $120^{\circ}$  F. Any increase of temperature above  $120^{\circ}$  is of no benefit. When a thermometer is not at hand, the proper degree of heat may be arrived at by directing the patient to have the water as hot as she can comfortably bear the hand in it. The outside skin is more sensitive than the vaginal mucous membrane, and the water as it first flows out of the vagina over the perineum will often feel uncomfortable, but that will soon pass.

The position of the patient is of importance as regards the second condition. If a patient is merely told to take a vaginal injection, without having the method specified, she will usually take it stooping over a vessel, and, as will easily be seen, the water will run out by the side of the tube as fast as it runs or is pumped in. The injection only reaches as high

as the end of the nozzle, and does not distend the vagina laterally. Such an injection may serve the purpose of cleanliness, but no other therapeutical end. To accomplish the result sought for, it is of the first importance that the hot water should be brought and kept in contact with the whole vagina, especially in its upper portion, for it will have some beneficial effect upon the pelvic circulation generally. The patient should, therefore, assume such a position that the upper part of the vagina shall be at a lower level than the entrance, which can be accomplished by placing her on the back with the hips raised higher than the shoulders. Water should then be allowed to flow into the vagina till it is full, and it should be kept full until the whole amount has been used.

Such amount should not be less than five or six quarts, and that quantity should be allowed to run at such a rate that it will take from fifteen to twenty minutes for the whole of it to flow.

To accomplish all these ends, some apparatus, simple or otherwise, is necessary. Almost any syringe can be used, though some have decided advantages over others. The Davidson or other bulb syringe is objectionable, because, if the patient, as is usually the case, has to give herself the injection, it is very tiresome to pump for so long a time, and because the force of the stream cannot be so accurately regulated.

The fountain syringe principle is the correct one, or the siphon, which also gives an uninterrupted flow ; but until very recently the rubber bags have not been made of sufficient size, the largest holding only two

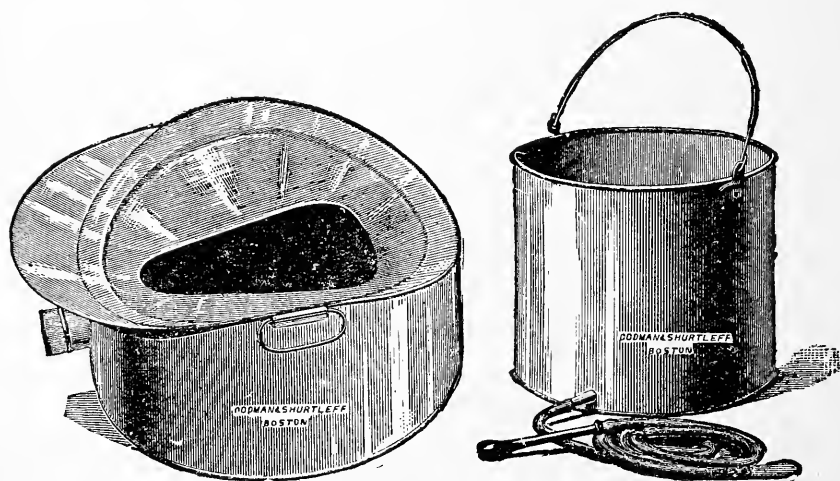
quarts. They are now made to hold four quarts ; but as the still larger quantity of six quarts is often necessary, some other arrangement is preferable. A tin receptacle, a pail which will hold six quarts, with a small opening, near the bottom, to which a rubber tube can be attached, will answer every purpose. The rubber tube should be six or eight feet long, furnished with a clamp to shut off the flow when necessary, and ending with a long vaginal nozzle. This nozzle is preferably of hard rubber, as both glass and metal convey heat too readily and are uncomfortable, and glass is liable to break.

The arrangement of the holes at the end is important. Formerly there was a central hole, and three others at the sides. Occasional attacks of uterine colic following the douche were observed, and they were attributed to the entrance of a small quantity of water into the cavity of the uterus from the direct stream through the central hole. Whatever was the cause, since they have been manufactured without such central hole these occurrences have practically ceased. The attention of the manufacturers was called to the fact, and nozzles are at present made with only the three side openings.

The next contrivance to be arranged is something to catch the water. If the patient is to lie on her back with her hips raised, she should be made comfortable and the surplus water should flow into some receptacle. The bath-tub may be utilized, or the water may be led off from the edge of the bed or sofa into a pail, the sides being protected with rubber cloth or

oiled silk. The best arrangement, however, is some specially devised plan which will support the hips comfortably, and hold the requisite amount of water. There are several complete apparatuses in the market, some of which are faulty in one or another respect. A thoroughly good one, and one which fulfils all the requirements of a douche apparatus, is that devised by Dr. W. H. Baker (Fig. 40). With it the patient can lie comfortably in the correct position for the fifteen or twenty minutes required to use the six quarts which the pail holds.

FIG. 40.

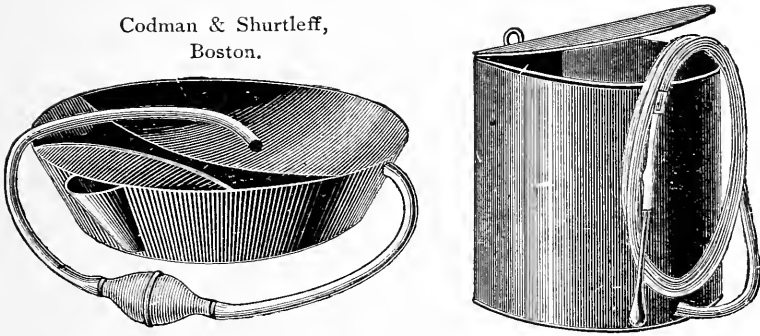


Baker's Douche Apparatus.

In some respects the Reynolds douche-pan and pail are preferable (Fig. 41). The pan is lower, hence easier for the patient to lie on. It also has the merit of emptying itself by means of the siphon arrangement, thus doing away with the necessity of lifting the pan filled with water.



FIG. 41.

Codman & Shurtleff,  
Boston.

The pail should be placed at an elevation of only a foot or two above the level of the bed or couch on which the patient is lying, so that the water may flow very gently. The water in the tube which has become cold should be allowed to flow into the pan before the nozzle is inserted into the vagina, and the patient should be well covered over.

The douches should be taken two or three times a day. Where there is a great deal of irritation as a result of the discharge I advise adding a tablespoonful of powdered borax to the last two quarts of the douche. Sometimes the hot water alone will not suffice, in which case some astringent may be added, as alum, a teaspoonful to the quart, or sulphate of zinc, 5j to two quarts. It is better to use the astringent solution only as the last part of the douche, letting the first few quarts remove all the secretions and diminish the sensitiveness.

A weak solution of corrosive sublimate (1 to 5000) may also be used in this way, and, in view of the recent researches which have demonstrated the gono-

coccus of Neisser to be the important factor in gonorrhœa, it should be faithfully tried.

After the acute symptoms have subsided, and the marked sensitiveness has gone, if irritation and leucorrhœa still persist, and there seems to be a tendency for the trouble to become chronic, packing the vagina with medicated cotton is a valuable resource. The packing is done in the same way as for the overcoming of adhesions as described in the chapter on displacements, only the vagina need not be tamponed so tightly. Treating the glycerine dressing with a solution of alum will make an astringent tampon which may be left in from two to three days, as the patient finds it comfortable. The glycerine and alum combine a depleting with an astringing effect. Creolin douches (3ss-5j to the quart) are often of value after the acute stage has gone by.

The treatment of specific vaginitis has been minutely described, because it is by far the most common form of acute vaginitis, and because the same treatment is applicable to vaginitis from other causes, though, as a rule, the simpler methods given are all that are necessary.

*Follicular vaginitis.* There is another form of acute vaginitis which is occasionally met with, called granular or follicular vaginitis. This is not of gonorrhœal origin, as a rule. It is very liable to recur at longer or shorter intervals. In the few cases that I have seen, no special cause for the fresh outbreak could be ascertained. When examined, the vaginal mucous membrane is found covered with the characteristic

creamy secretion, and projecting everywhere from this yellow base are the reddened tops of the papillæ. They are sometimes so prominent and bleed so easily that rubbing the cotton-stick over them to wipe away the secretion will denude them of their epithelium. This appearance may be very generally distributed over the vagina, or confined to certain localities. If not general, the anterior wall and the cul-de-sacs are the favorite spots, and it is in these places that it resists treatment most stubbornly.

The most effectual treatment is the application of glycerite of tannin—glycerine four parts, tannin one—at first with a cotton-stick every other day, giving an opportunity for three douches a day, and later on a light tampon of cotton, which is allowed to remain two days, and, of course, precludes the use of the douche.

*Chronic vaginitis.* Chronic vaginitis sometimes starts as an acute attack, but quite as often is chronic from the beginning. The latter form is most commonly the result of endometritis, the irritating discharge from the cervix setting up a chronic form of vaginal inflammation, which is relieved when the endocervicitis is brought under control by appropriate treatment. When not so dependent, and requiring special treatment, the most effectual is the application of a solution of nitrate of silver. As the vagina is very much more sensitive in some cases than in others, it is well to begin with a moderately weak solution of twenty grains to the ounce. This can be applied by means of the cotton-stick, thor-

oughly to the whole vagina, using Sims's speculum, care being taken not to neglect the posterior wall, but to paint that as the speculum is withdrawn. A cotton dressing should then be placed in the vagina to keep the walls apart. If improvement does not follow, a stronger solution of thirty grains to the ounce may be used.

We occasionally meet with a very obstinate form of chronic vaginitis, characterized by very persistent and troublesome itching, and by the presence on the walls of the vagina of a more or less thick deposit of what might be called inspissated secretion, a cheesy, smegma-like substance without especial odor. The vagina in these cases is very dry, and the secretion, when rubbed off with the cotton-stick, does not adhere to the cotton, but comes away in small rolls or fragments.

Occasionally such cases will improve under the milder applications of tannin and glycerine, or solutions of nitrate of silver; sometimes more radical treatment is necessary.

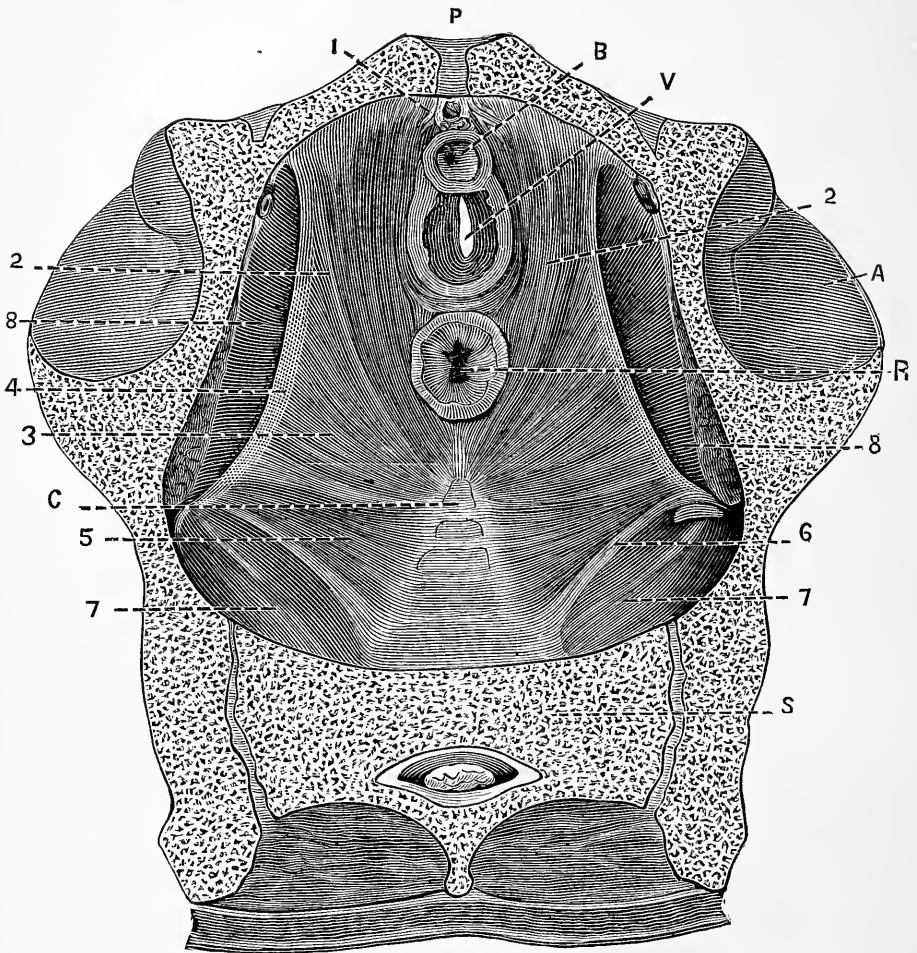
Such treatment consists in the thorough application of the solid stick of nitrate of silver to the whole surface of the vagina. This should be done under ether, and the walls of the vagina kept apart either with a glass plug or with a moderately firm cotton tampon. Considerable inflammation usually follows, with purulent discharge, and after the first two or three days the plug or tampon may be removed and hot douches given three times a day.

## CHAPTER VI.

### DISLOCATIONS AND LACERATIONS OF THE VAGINA.

THIS is an exceedingly important branch of pelvic troubles, inasmuch as these affections are very frequently met with, and are due generally to a single cause, and are effectually and easily remedied. To rightly understand this subject, it is of first importance that we should know the pelvic floor. The outlet of the pelvis is closed by a diaphragm composed of several groups of muscles which are attached to its bony circumference, and unite in the median line, and are further strengthened by the different layers of the pelvic fascia. They present a barrier to any undue downward motion of the organs which lie above them, and support these organs in their natural position. These muscles present a solid floor, except for three openings in them which allow the exit of the three canals, rectum, vagina and urethra. The largest and most important of this group of muscles is the levator ani. This muscle is attached to the pubic bone and the spines of the ischia, and running downwards and backwards, unites with its fellow on the opposite side in the median line, and is attached to the lower part of the vagina and the rectum. It is a broad flat muscle of considerable strength. At one part where it is weak it is reinforced by a small muscle called the transversus perinæi, which has practically the same

FIG. 42.



Muscles of Pelvic Floor (Savage) : *B*, neck of bladder ; *V*, vagina ; *R*, rectum ; *P*, symphysis pubis ; *C*, coccyx ; *S*, sacrum ; *A*, acetabulum ; *I*, anterior vesical ligaments ; 2, pubo-coccygeal portion of levator ani ; 3, obturator-coccygeal portion ; 4, ilio-pubic line of the latter ; 5, ischio-coccygeal portion ; 7, pyriformis muscle ; 8, obturator muscle.

use as the levator ani. The third muscle which is of importance in this connection is the bulbo cavernosus, or so-called sphincter vaginæ.

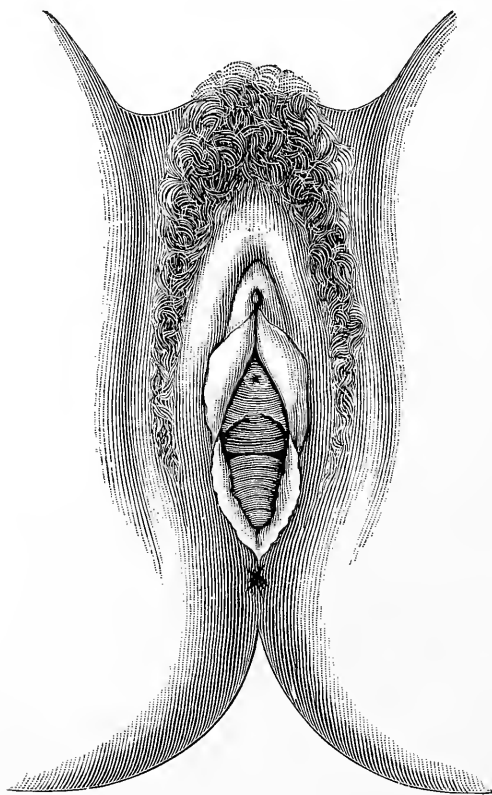
This muscle, as its name implies, surrounds the opening of the vagina outside of the levator ani muscle ; its fibres are attached to the pubic bone in front, and, circling around the vaginal opening, unite in the perineal body between the anus and the vulva. Its fibres also are associated with the sphincter ani, which has the same function with regard to the rectum, and the two act similarly. These muscles are strengthened and separated by the superficial and deep layers of the pelvic fascia, the whole forming a firm resistant diaphragm, which, when intact, is an effectual support to the over-lying viscera. The perineal body, so called, must not be confounded with the perineum. The perineum is that external surface which lies between the fourchette and the anus. The perineal body is that wedge-shaped mass of tissue which separates the vagina from the rectum. It is made up of the ends of the various muscles which center in it, and by its position serves to strengthen the pelvic floor at a point where it is weakened by the separation of the muscles to allow the vagina to pass.

The importance of the integrity of these muscles in preventing prolapse and other dislocations of the vagina and uterus cannot be over-estimated. Almost the sole cause which can affect their integrity is parturition. Exceptionally, it is true, there may be such a lax condition of the ligaments and muscular system generally as to admit of the descent of these organs without any laceration. This usually only follows severe and unusual and prolonged muscular effort. In ninety-nine-one-hundredths of all cases of

dislocation of the vagina that we have to deal with, parturition is the cause.

In normal parturition there are two obstacles which the head may encounter after it has entered the vagina, and which may be the cause of laceration. The first is a failure of the levator ani to perform its function properly. As we have said, the levator ani muscle is attached to the lower part of the vagina, and its function seems to be to draw back the vagina over the advancing head. If now we have

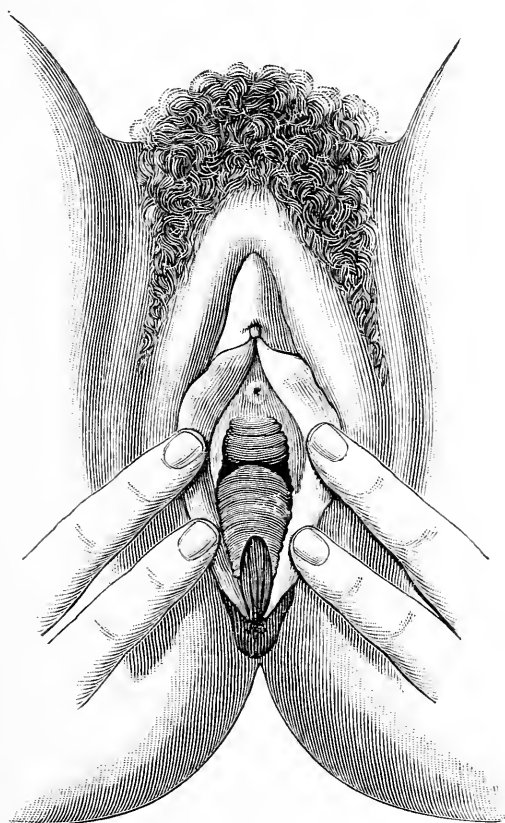
FIG. 43.



Incomplete Tear of Perineum.



FIG. 44.



Complete Tear of Perineum.

a muscle which does not readily yield, or if the head of the child is disproportionately large, the vagina cannot be drawn back ; and the insertion of the muscle at one or the other, or both sides of the vagina, is liable to give way. The second trouble which may occur at parturition will be due to the failure of the bulbo cavernosus muscle to relax sufficiently to allow the head to emerge. This is usually followed by a rupture of the perineal body to a greater or less extent, and usually in the median line.

We may divide the lacerations of the lower part of the vagina and the perineal body which result from these difficulties into three main varieties, which is all that is necessary for practical purposes. The first of these is laceration of the bulbo cavernosus muscle and perineum proper. This may be of any degree, from a slight nicking of the fourchette and external perineum, to an extensive tear, which may involve the whole perineal body and the sphincter ani and extend an inch or two up the rectum. The former is called an "incomplete tear" (Fig. 43); the severer form, the "complete" (Fig. 44). The second form of injury which is likely to occur is a giving way of the tissue sub-cutaneously without much or any external evidence of the tear. In this case the muscles which unite in the perineal body are forcibly stretched apart, and as a consequence the integrity of the perineal body is gone. The third form of laceration, and in many respects the most important, is the giving way of the attachment of the levator ani muscle from the lower part of the vagina.

*Diagnosis.* The diagnosis of the first form, namely, the external median tear, is comparatively easy. Examining the patient on the back and separating the labia majora, we see the absence of the normal perineum. It is not always possible to estimate the amount of prolapse which has followed this injury by the external appearance alone; but by asking the patient to bear down, we are enabled to judge, by the rolling out of the lower part of the vagina, how much subsequent prolapse has occurred. The second form is less easily recognized by the sense of sight. To all

external appearances, the perineum is intact. There is, however, a bulging of the perineum as a whole, which is suggestive; and on palpating the perineum between one finger in the rectum and one in the vagina, its thin and lax character will be evident. Instead of the thick, firm mass of muscular tissue, we have merely a thin septum, which is practically skin and mucous membrane. The third form of injury is important, in the first place, because it is only comparatively recently that it has been recognized, and secondly, because it is followed by the most marked symptoms. It is more often followed by prolapse of the vaginal mucous membrane than either of the other forms. Sometimes this prolapse is more marked on the anterior vaginal wall, constituting what is known as cystocele; sometimes on the posterior vaginal wall, which is called rectocele. The diagnosis of this condition is made by recognizing on one or both sides of the lower part of the vagina, a sulcus, which is caused by the giving way of the attachment of the muscle to the vagina. This is often so deep that the finger may be placed in it without depressing the structures to any extent. When both sides are torn, there is the very characteristic appearance of a central projection, the beginning rectocele, with a deep depression at either side.

*Symptoms.* The symptoms of these various injuries to the vagina, with the sole exception of the complete tear through the sphincter ani, come on slowly. In that variety, the incontinence, which is a necessary result of the tear, shows itself at once. There may be

in all these forms a retarded convalescence on the part of the patient, but there will be generally no marked symptoms until she begins to get about and to resume her usual duties. Even then, for a long time, the patient may consider herself well. Whether or not symptoms come on will often depend more upon the general health of the patient than the extent of the tear. The first complaints that she will make are of a general feeling of discomfort, especially on standing—less when walking. There is a feeling of weight and pressure in the lower part of the abdomen, a bearing down sensation in the vagina, backache, pains in the upper parts of the legs, and an inability to take the usual amount of exercise. There is rarely acute pain. If the uterus becomes affected, as it may after a longer or shorter period of time, it is usually found to be retroverted, and, as a secondary result, prolapsed. This mal-position will oftentimes be accompanied by disturbance of menstruation, by leucorrhœa and increased weight of the organ. If there is a prolapse of the posterior vaginal wall, or rectocele, constipation is apt to be a prominent symptom; and the form of constipation we find in these cases is that where there is an inability on the part of the rectum to empty itself. This follows as a natural result from the injuries to the muscles which have to do with the expulsion of the fæces. If cystocele is a prominent factor, urinary difficulties are apt to occur, due to the failure of the bladder to completely empty itself, and the consequent decomposition of the urine; so that irritation of the bladder and cystitis may result.

Sometimes the opening of the vagina is so patulous that air enters and is expelled on sudden motion, or change of position, with noise, which is pathognomonic of a laceration of the perineal body. Quite as important as the local symptoms, and quite as often the symptoms which will lead the patient to seek relief, are those which have special reference to the nervous system. These come on usually a number of years after the original injury, and are often the only ones which lead the patient to demand relief. Even where there may be very little local discomfort, there are not unfrequently marked symptoms of a general character. They may be of the head, such as headaches or neuralgias; they may be disturbances of digestion; they may be loss of control, change of disposition, inability to concentrate the mind on work, or fatigue on slight exertion.

*Treatment.* The only satisfactory method of treatment for these troubles is operative. Any other form of treatment must necessarily be palliative merely, and hence to a degree unsatisfactory; yet it occasionally happens, from one cause or another, that it seems wisest not to attempt an operation. For these cases, therefore, some relief to the symptoms of which the patient complains is imperatively demanded. The symptoms which most clearly demand relief are the increased weight, and the consequent dragging of the heavy uterus. Therefore our efforts must be directed towards supporting and depleting the heavy uterus, and preventing the vaginal walls from prolapsing. Obviously the best method of doing this is by means of

some artificial support. The problem to be solved is to apply such a support as shall remain in place, shall hold the uterus up, and shall be comfortably borne. Sometimes the first condition cannot be met, owing to the extensive laceration of the outlet of the vagina, which prevents any pessary from remaining in place. Where there has been a good deal of prolapse, and the parts have become stretched and hypertrophied, some preliminary treatment directed towards reducing the size of the vagina is not infrequently demanded. This can be accomplished by the use of glycerite of tannin tampons. A mass of wool, to which a string is attached, large enough to fill the vagina thoroughly, is impregnated with a considerable quantity of the glycerite of tannin—glycerine, four parts, tannin, one part—and allowed to remain in the vagina for two or three days. This, in addition to exerting its astringent effect upon the vagina, will also to a certain extent deplete it and narrow its caliber. The uterus is also kept in position by this means. After the temporary use of these tampons for two or three weeks, the parts will have so far regained their tone that a support can be worn. The choice of support will be determined by the peculiarities of the individual case. The most universally applicable support in my experience has been the large round rubber ring (see Fig. 91), which presents a large surface for the vagina to grasp, and can be worn moderately tight without causing ulceration. Sometimes a hard rubber pessary of the Hodge variety, with a broad lower end (see Fig. 76), so as to be held in place by pressure on the rami of the pubes, will be

found to retain its position better. Where a patient depends upon a pessary for the relief of symptoms due to this cause it will usually be found that it will have to be worn continuously; the relief is palliative and temporary only.

*Operative treatment.* We come now to the operation. The immediate operation is a simple one. As a rule, the anæsthesia of labor will suffice, and the parts have been so bruised during the delivery that they are not specially sensitive. The tear can be accurately seen and brought into immediate and accurate apposition. The best material to use is either silk-worm gut or silver wire, and the sutures should be passed deeply and made to include the whole depth of the torn surface. They should be kept cleansed during the puerperium, and removed after about a week. If the laceration is not operated upon immediately at childbirth, it is best not to attempt to operate until a much later period. The parts will probably not unite unless the operation is done within a very few hours of delivery. If this favorable time is neglected, it is then wisest to wait until the patient begins to show symptoms and applies for relief. Any time may be chosen for the operation between two menstrual periods, up to three or four days before the catamenia are expected. If convenient, as soon as possible after the menstrual period is to be preferred.

The preparation of the patient consists in securing thorough evacuation of the bowels the morning of the operation by the use of a cathartic the night before, and an enema on the following morning. A corrosive

sublimate douche of one to five thousand should be given the night before, and on the morning of the operation. It is a convenience, but not essential that the hair about the vulva should be shaved. After the patient has been etherized and placed upon the table, the vulva and vagina should be thoroughly cleansed with soap and water, and then douched with sterilized water. A room with a north light is preferable for the operation. A table is necessary ; and any firm table that is four feet long and two and one-half feet wide, or larger, will answer the purpose. The physician should see that his hands are made thoroughly aseptic by the use of soap and water for five minutes, and then thoroughly bathing them in alcohol. The instruments should be boiled, towels and sheets sterilized and the utmost care exercised throughout the operation that nothing should interfere in any way with perfect asepsis.

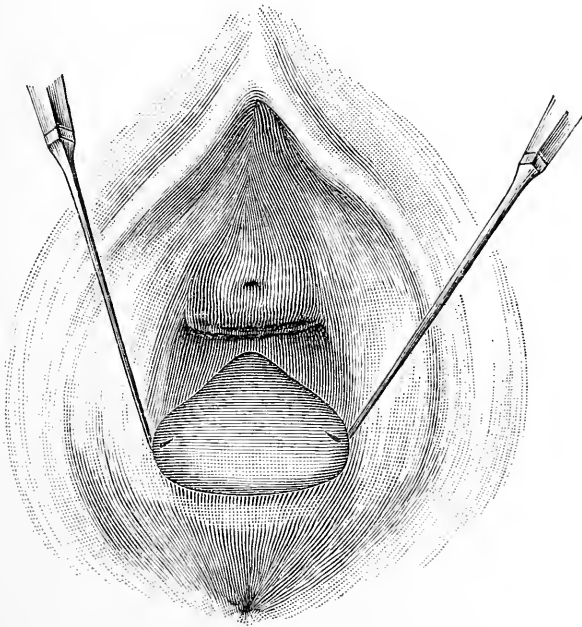
There are two steps in the operation : first, the refreshing of the torn surface, and second, the applying of the sutures.

*Denuding.* The area to be denuded will, of course, vary with the variety of the laceration that we have to deal with. In the first form, that of laceration of the perineal body, we have three landmarks, the upper one, the posterior vaginal wall in the median line, and the two lateral ones at the edges of the torn perineum, just outside the border of the hymen. If the two sides of the vulva are seized, and brought up together, so that the ring of the hymen is made complete, the amount of torn surface will be easily recognized. Where there is doubt as to how far out upon the side the de-



nuding should go, it will aid us to remember that the denuding should not include the orifices of the vulvo-vaginal glands ; and these points may well help to determine where one should begin. The position upon the posterior vaginal wall—our first landmark—will vary according to the amount of rectocele. A point should be seized with the tenaculum far enough up, so that, it being drawn down towards the outlet, it will easily come to a level with the normal projection of the perineum, without undue traction. If, on drawing it down, the tissues become blanched, thus indicating that the circulation is interfered with, it will show that we have seized it too high up. The area to be de-

FIG. 45.



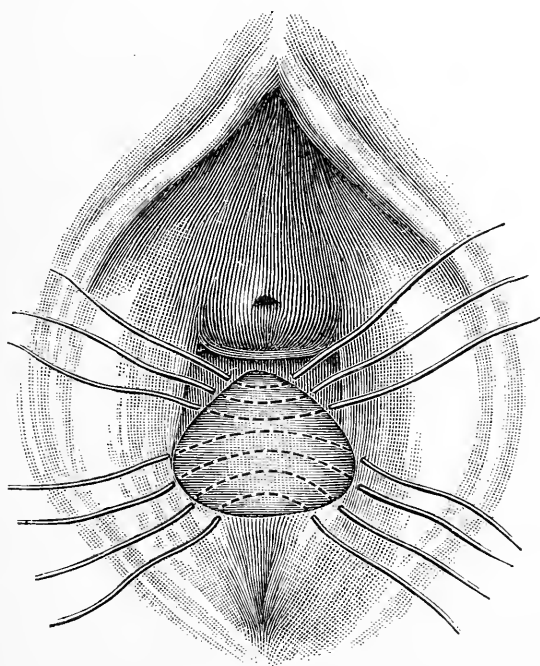
Denudation for Simple Laceration.

nuded in this simple form of laceration will be in general a triangular-shaped surface, with the apex in the vagina, the lower angles at the sides of the perineum, and the base, a semi-circular line connecting these points (Fig. 45). Having seized the three landmarks with tenacula, the mucous membrane between is denuded freely with scissors. Starting from one lateral angle, a strip of tissue is removed which keeps well outside of the cicatrices, and includes a narrow band of intact skin. Strip after strip is thus denuded, until the whole surface has been included. The denuding should be free, and to a considerable depth. There is no danger of wounding the rectum. It is unnecessary to pass the finger into the rectum, and such proceeding would prevent perfect asepsis. There is rarely any serious hemorrhage, and the few bleeding points that occur can be temporarily seized with catch-forceps.

*Passing of sutures.* Having denuded the necessary area, the next step is the passing of the sutures. In this operation there are two sets of sutures, the perineal and the vaginal. When this triangular-shaped area is folded together, it will be seen that on profile there are two surfaces, a vaginal surface which extends out to the crown of the perineum, and a perineal surface which runs down on the external skin. (See Fig. 48.) We use different suture material for these two sets of stitches. For the vagina, where there is very little tension, and where the removal of the stitches would be difficult, chromicized catgut will be the best material. Starting at the upper angle, the needle is

passed through the intact mucous membrane, one-eighth of an inch from the edge, downwards through the vaginal tissues to the median line, then re-entered and carried up to emerge at a corresponding point on the opposite side. Other stitches, parallel to the first, but including more tissue, are successively passed until the whole vaginal surface has been included (Fig. 46). These sutures may be either interrupted or,

FIG. 46.

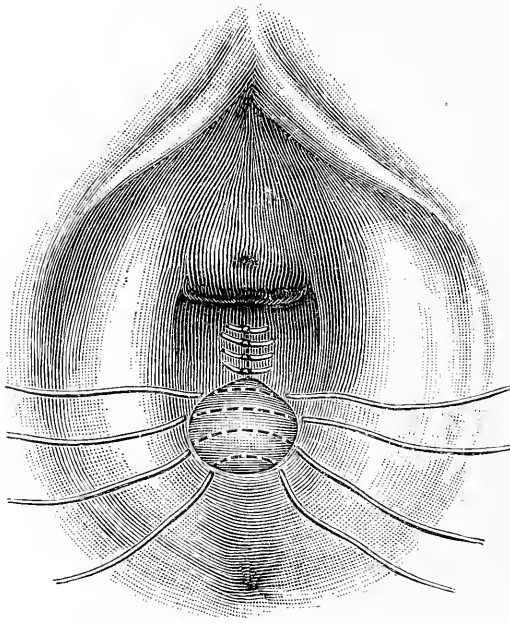


Vaginal and Perineal Sutures Before Closing.

what is perhaps more convenient, a single uninterrupted suture. The resulting condition is represented in Fig. 47. For the perineum, the best suture material is silkworm gut. We begin at the lower angle,

and pass a silkworm gut suture through the skin, and then upwards to the median line, enter it again at the same place and carry it downwards and out at a

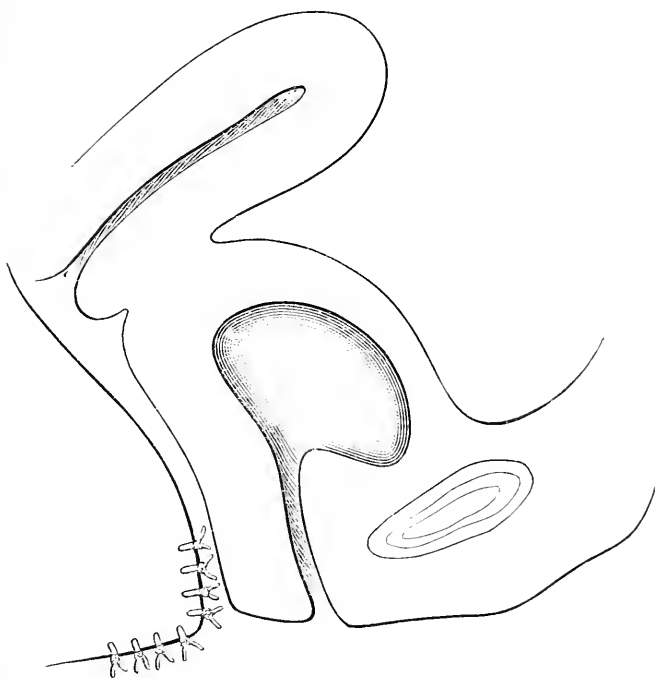
FIG. 47.



Vaginal Sutures after Closing, with Perineal in Place.

point corresponding to that of entrance on the opposite side. Similar sutures are placed at intervals of a quarter of an inch, the last, called the crown stitch, including the two angles of the perineum, completing the operation (Fig. 48). Some operators prefer silver wire to silkworm gut, and it may very well be used; but it is not quite so comfortable for the patient. The ends of the perineal sutures are best left long, and are tied together in a fan shape, or, if silver wire, the ends are shotted. No occlusive dressing is necessary.

FIG. 48.



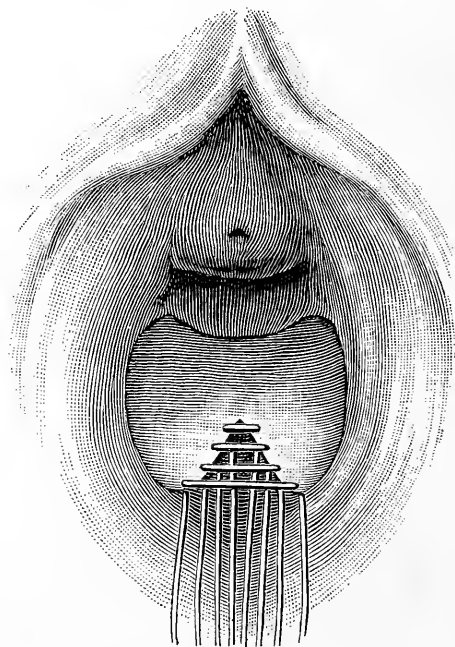
Profile of Perineal Body after Tightening of Sutures.

*After-care of patient.* The after-care of the patient following this operation is simple. She may be allowed to pass her urine, care being taken to douche the parts, or thoroughly bathe them after each urination. It is not necessary that she should be kept on her back, but she may lie upon her side at her convenience. The diet for the first two days should be liquid; after that, simple but nutritious. The bowels should be moved upon the second day, and in addition to the cathartic it is wise, for several days at least, to administer an enema before each evacuation so that there may be no straining. Douches will add to the

comfort of the patient, and should be given every day, one or two, according to the amount of the discharge. The external stitches may be removed from the eighth to the tenth day, and the patient be allowed to get up in two weeks; and be allowed to move freely about at the end of three weeks.

*Operation for laceration involving sphincter ani.* Here, in addition to the torn surfaces which we have been considering, we have a third, that of the lower

FIG. 49.

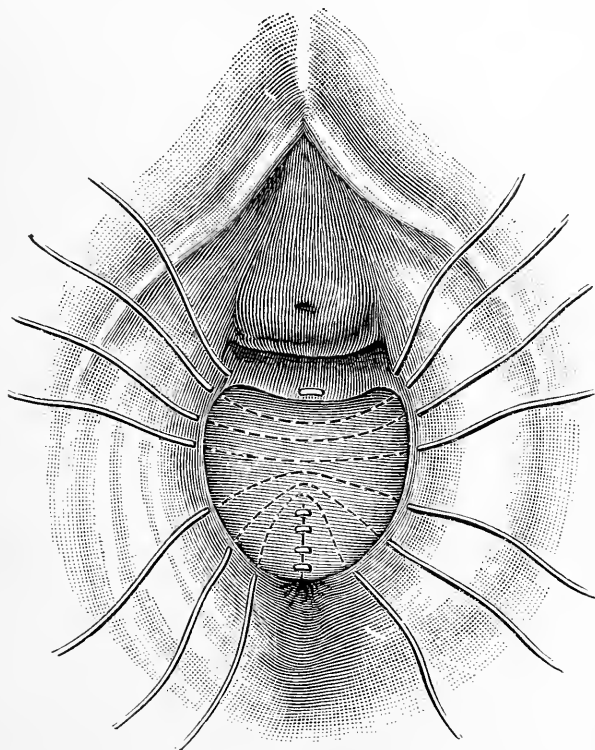


Butterfly-Shaped Denudation for Tear through Sphincter Ani with Rectal Sutures.

bowel. Owing to the laceration of the sphincter ani, the torn ends of that muscle have contracted, and are represented by little puckered areas at either side of

the anus. It is essential to the success of this operation that the torn ends of this muscle should be brought together. The denuding, therefore, should be more extensive, and should include the skin over the retracted ends. This will result in a butterfly-shaped denudation (Fig. 49). The edge of the bowel should also be refreshed. Inasmuch as the rectum is torn, we have, in suturing, a third set of stitches to pass, namely, those to unite the torn edges of the bowel. These must be passed from the bowel side, and, like the vaginal sutures, may be uninterrupted, and of catgut. The

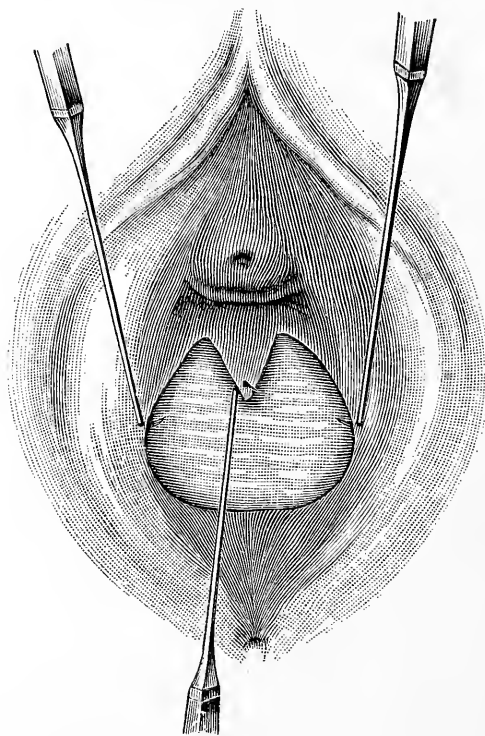
FIG. 50.



Rectal Sutures Tied, Perineal and Vaginal Sutures in Place.

perineal sutures in this case should start well down towards the sides of the anus and include a large amount of tissue, so as to bring up the retracted ends of the muscle to the median line (Fig. 50). An im-

FIG. 51.



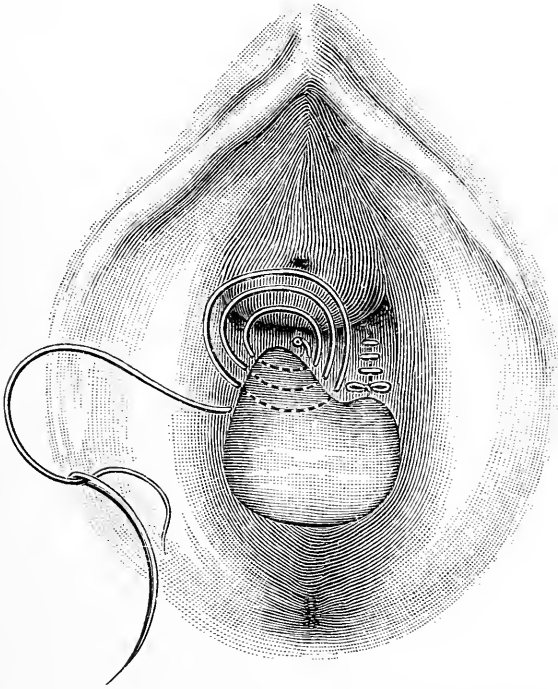
Area of Denudation. Emmet's Operation.

portant precaution to observe in this form of tear is to paralyze the sphincter by over-stretching it before the denuding is begun. This is so as to allow a ready exit to gases from the bowels, which otherwise might cause a spasmodic contraction of the sphincter and be forced through the newly approximated tissues, and thus invalidate the operation.



*Laceration of the levator ani.* The third general form of laceration is that which involves the fibres of the levator ani muscle, of one or both sides. As these fibres are attached to the lower end of the vagina, the operation for the repair of this laceration will be mainly vaginal. As has been seen, there are one or two sulci formed by the separation of this muscle from its attachment to the vagina, between which is a tongue

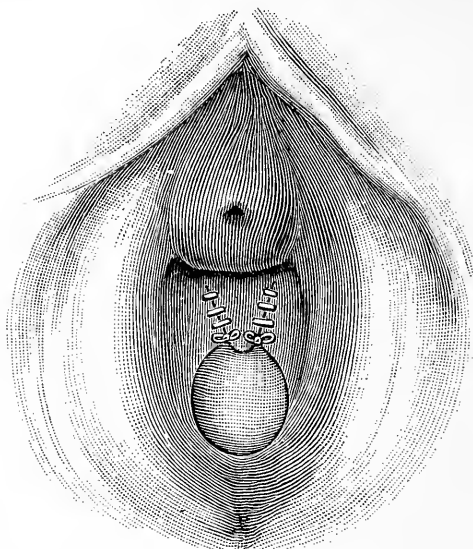
FIG. 52.



One Side Sutured, Stitches in Position on the other.

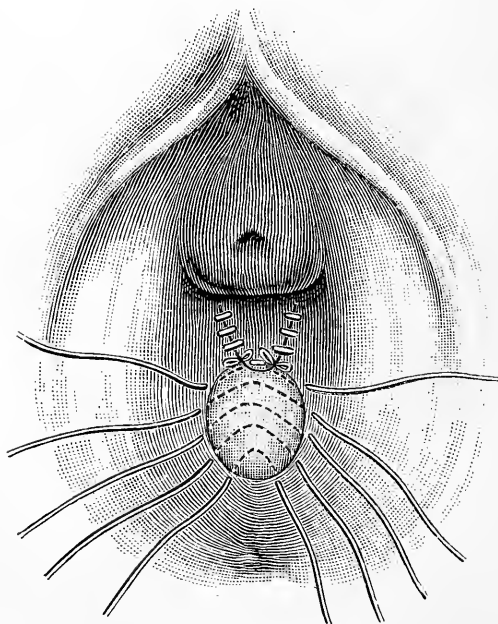
of intact vaginal tissue. Our denuding must include these sulci. Seizing the posterior vaginal wall in the median line, we draw it downwards and to one side,

FIG. 53.



Both Sides Sutured.

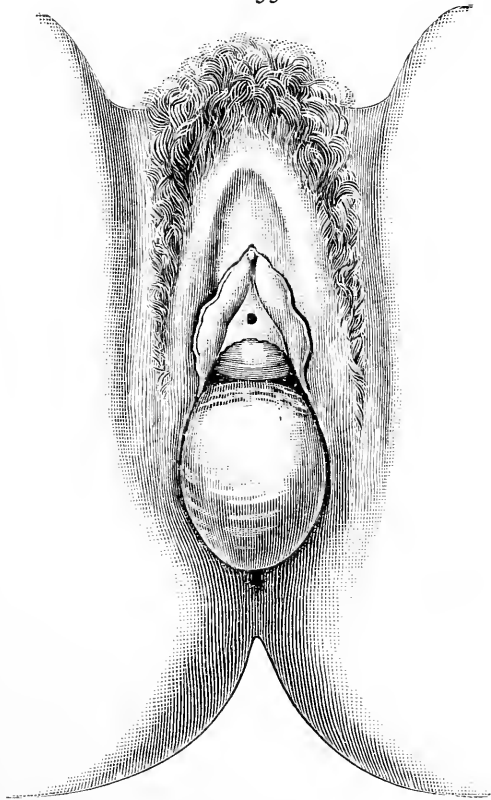
FIG. 54.



Perineal Stitches and Crown Stitch.

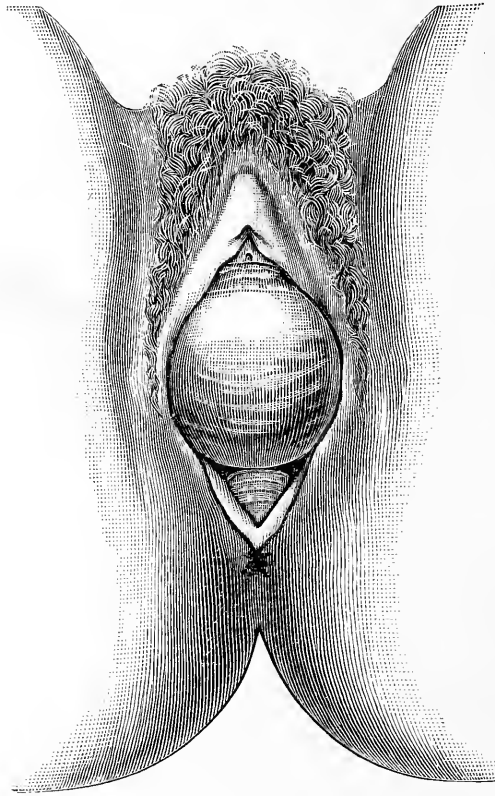
and observe where the groove or sulcus ends on the posterior vaginal wall. At that point will be the upper limit of our denuding for that side. The same is then done on the opposite side. The resulting area will have the shape as shown in Fig. 51. Each of these triangular-shaped areas is sutured, as in the first case, with catgut (Figs. 52 and 53), and the external perineum sewn in the same way as described before. The crown stitch here includes the two lateral angles of the tear and the end of the tongue of the posterior vaginal wall (Fig. 54).

FIG. 55.



Rectocele.

FIG. 56.

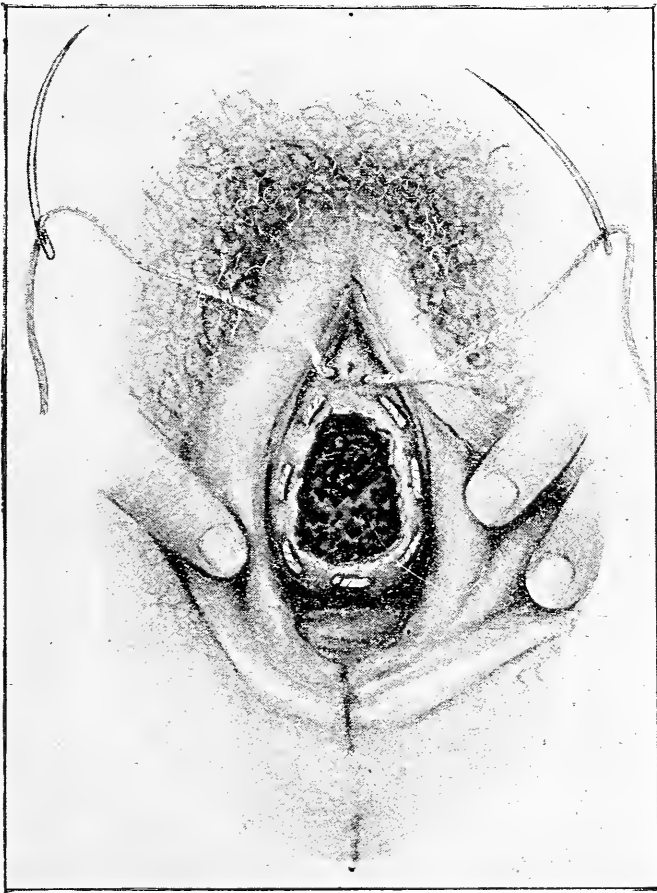


Cystocele.

While these are the general rules which govern operations on the perineum, yet, inasmuch as each case will present certain special features, so the operation for an individual case must necessarily vary. A combination of one or more of these operations, or a partial operation, either confined entirely to one side or much more extensive on one side than the other, may be necessary. Skill and judgment in deciding what particular form of operation is demanded are essential to success.

*Rectocele and cystocele.* There are two results of lacerations of the perineum, which sometimes overshadow all the other consequences. Sometimes the posterior vaginal wall is prolapsed to such an extent

FIG. 57.

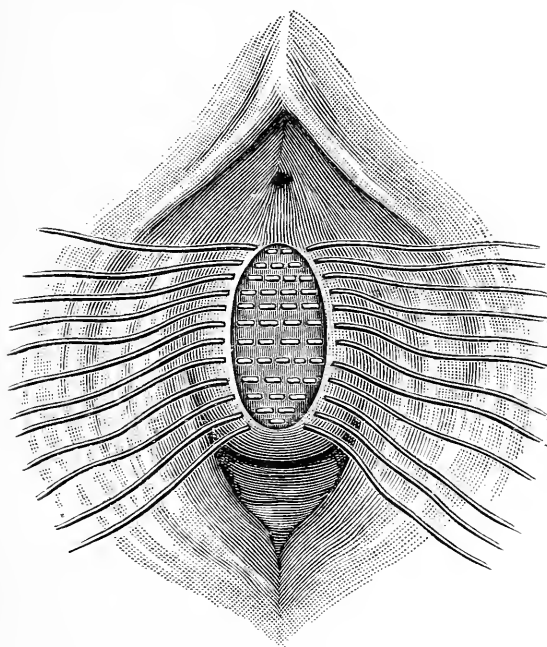


Stoltz's Operation for Cystocele (Thomas and Mundé).

that it becomes the main feature, and is known as a rectocele (Fig. 55). Sometimes the same condition exists upon the anterior vaginal wall, and is known as

cystocele (Fig. 56). The rectocele may be relieved by the same operation which repairs laceration of the perineum. It merely means a more extensive denudation. Cystocele, however, will demand a special operation. There are two varieties of operation which may be recommended, the first of which is the so-called purse-string operation, devised by Stoltz. In this operation a circular-shaped area of the anterior vaginal wall, large enough to include the greater part of the bulging mass, is denuded of its mucous membrane. A single suture is then passed in and out around the edge of this denuded surface just inside the intact mucous membrane (Fig. 57); and when this is drawn upon, it puckers the membrane together, as a string would the mouth of a purse. This is then twisted tightly, or tied, and allowed to remain for a week or ten days. This is a simple operation, but is not so surgical as the one to be described. In this operation an oval-shaped area is denuded; its upper angle being just below the cervix uteri, its lower angle at a point opposite the neck of the bladder, and extending laterally so far that the edges can be brought together in the median line without too much tension (Fig. 58). A series of interrupted sutures are then passed, beginning at the upper angle, and at about one-quarter of an inch apart. These are not buried throughout their whole extent, but pass in and out through the tissues. Silkworm gut is the best material to use. The sutures are tied, the underlying bladder wall being folded in, and are left long and brought outside the vagina. After this operation the

FIG. 58.



Elliptical Denudation for Repair of Cystocele.

bladder should not be allowed to become distended, but should be emptied by means of a catheter at first once in four hours, after a few days once in five hours, and so on until the patient may be allowed to hold the water as long as she likes.

## CHAPTER VII.

### DISPLACEMENTS OF THE UTERUS.

OF all the affections of the uterus with which we have to deal, displacements are perhaps the most common. Both as regards diagnosis and treatment, there is very much which ought to be thoroughly understood by the general practitioner, for nine-tenths of the cases of malposition which come under his observation are simple, and need only the ordinary application of common sense principles for their successful treatment. It will be my aim in discussing this subject, as far as possible, to formulate certain general principles, which can be used in making a correct diagnosis and applying the appropriate treatment.

The displacements to which the uterus is liable, and which we have to consider, are retroversion, retroflexion, anteversion, prolapse and procidentia.

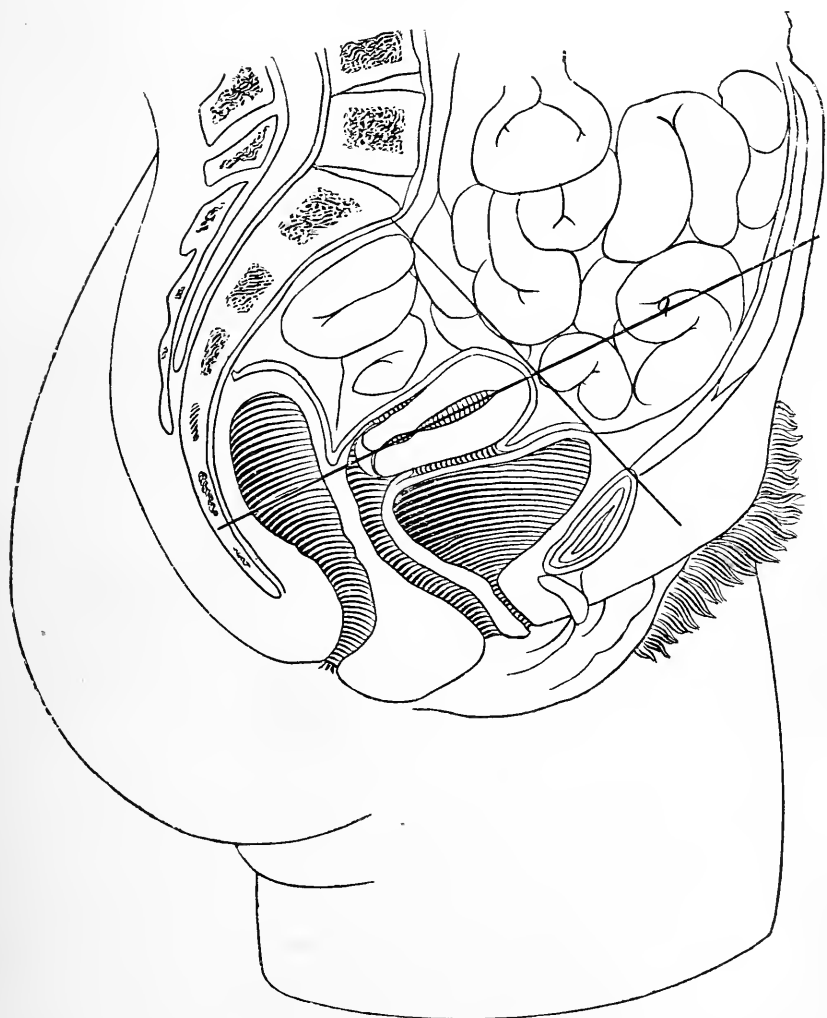
The diagnosis of uterine displacements is absolutely dependent upon the bimanual examination. Whoever attempts to determine the position of the uterus by the simple vaginal exploration with one or two fingers of one hand will fail in a great many cases. The general rules for the conjoined manipulation have been laid down in the chapter on "Methods of Examination," page 54, and it remains to apply those principles to the diagnosis of the position of the uterus.

*Normal position of the uterus.* The normal position



of the uterus has been a much discussed question, but the general opinion of the best observers now seems to be that it has no fixed position, but varies with the degree of distention of the bladder, less with that of the rectum. With the patient in the erect posture,

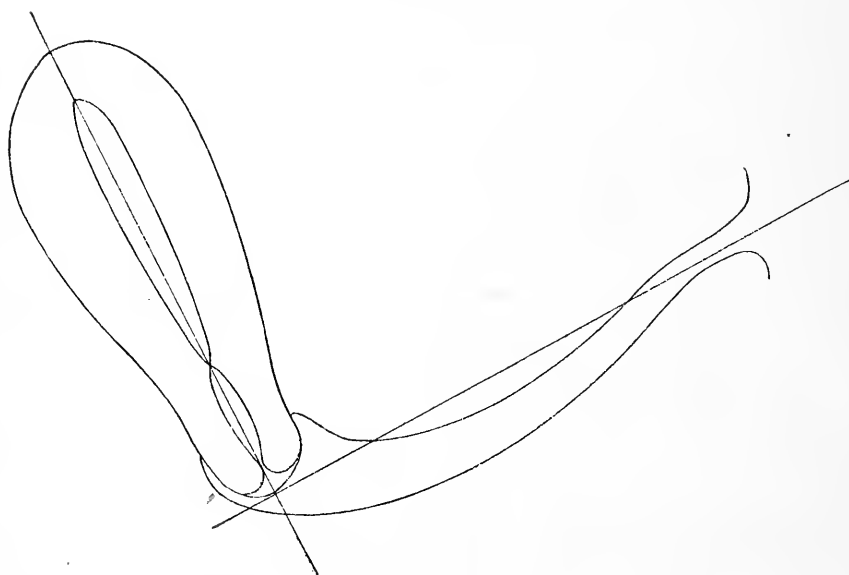
FIG. 59.



Normal Position of Uterus (Schematic).

the uterus lies nearly at right angles to a line drawn perpendicularly through the axis of the body (Fig. 59). A line drawn from a point midway between the pubic bone and the umbilicus to the hollow of the sacrum will fairly well represent the long axis of the uterus, and the fundus is about on a level with the

FIG. 60.



Relation of Axis of Uterus to that of Vagina.

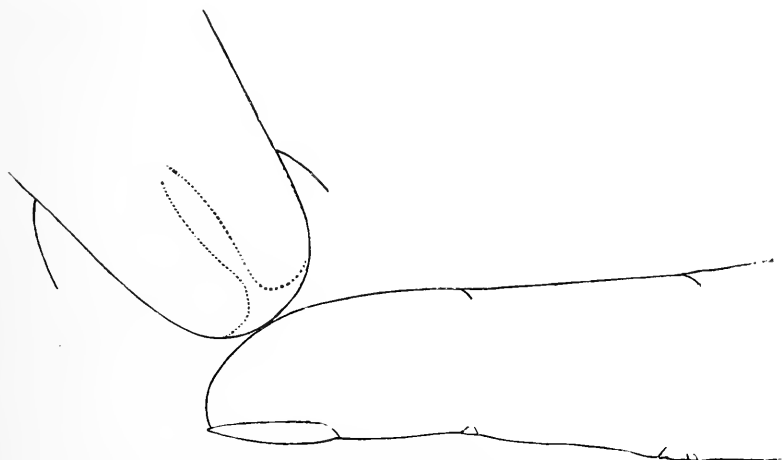
superior strait. This is with the bladder and rectum empty. A full bladder will raise the fundus so that it may lie very nearly in the line of the long axis of the body. The cavity of the uterus itself has a slight curve with the concavity forward and downward.

*Vaginal examination.* With the patient on the back, the forefinger of the left hand, well oiled, is carried into the vagina, and passed up until it reaches the

cervix. This is a conical-shaped body projecting into the lumen of the vagina, considerably firmer than the surrounding tissues, except when softened by pregnancy or disease, and varying in shape, size and consistency from a multitude of causes.

*Position of cervix.* The direction in which the cervix points is the special feature to be noticed in this connection. If a straight line is drawn through the axis of the vagina, and another through the long axis of the uterus, they will meet at approximately a right angle (Fig. 60). That is, the uterus, when in a normal position, lies nearly at right angles to the axis of the vagina. This is evidenced to the examining finger

FIG. 61.

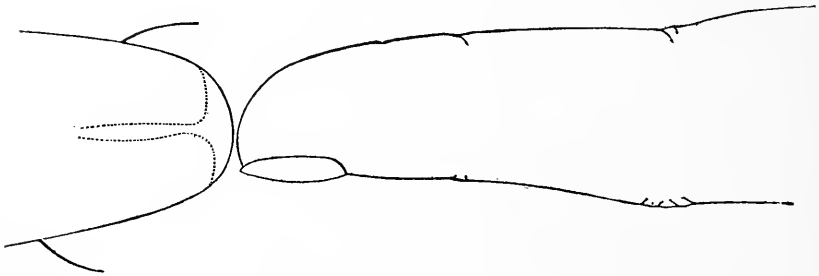


Normal Position of Cervix.

by the fact that the os uteri, which is at the end of the cervix, impinges upon the ball of the examining finger (Fig. 61). If we find this to be the case we are prepared to say that the *cervix* is in its normal

position, as far as forward or backward displacements are concerned. On the other hand, the examining finger may, on reaching the cervix, find that the os strikes directly against its end (Fig. 62); and the finger, if it could be elongated, would pass on in the

FIG. 62.

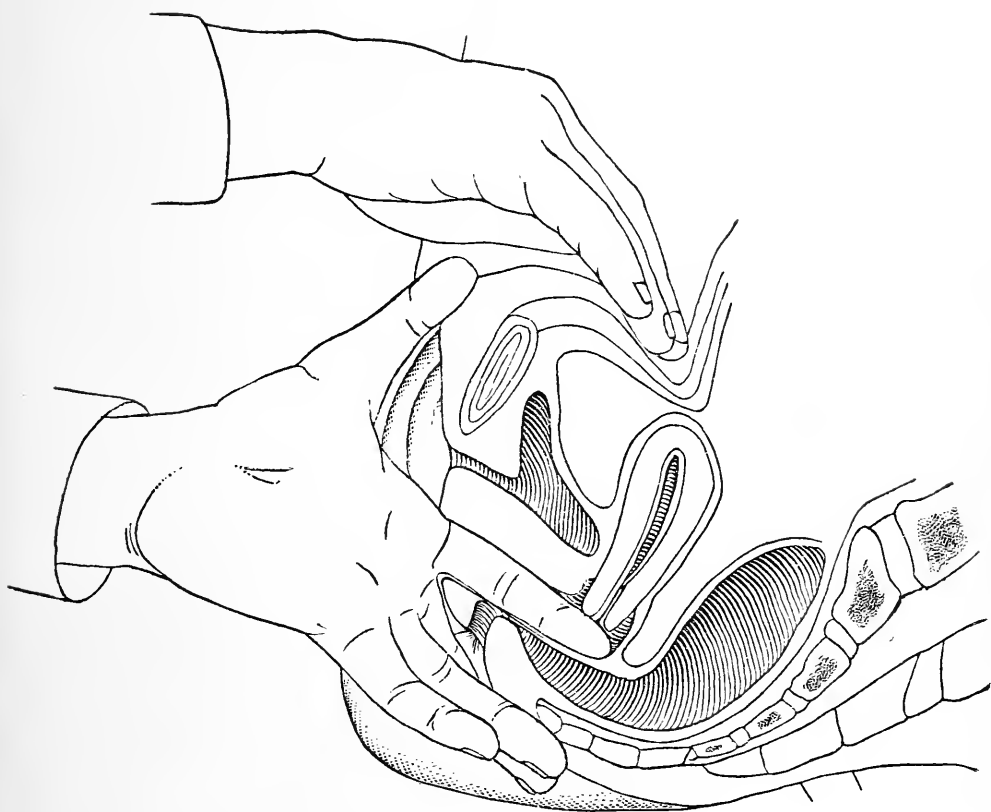


Cervix in Axis of Vagina.

same direction into the cavity of the uterus, showing that the cervix is pointing in the axis of the vagina. The cervix, again, may point further back toward the promontory of the sacrum, or forward toward the arch of the pubes.

*Position of body.* So much for the cervix, which is capable of assuming these various positions irrespective of the position of the body. The determination of the position of the body of the uterus is a more difficult matter. With the examining finger in the vagina and the other hand making pressure outside over the abdomen, it is sought to make out the body of the uterus between the two. The finger in the vagina gently raises the uterus, and if a solid resisting body is felt between the hand on the outside about midway to the umbilicus, and the finger inside, the

FIG. 63.

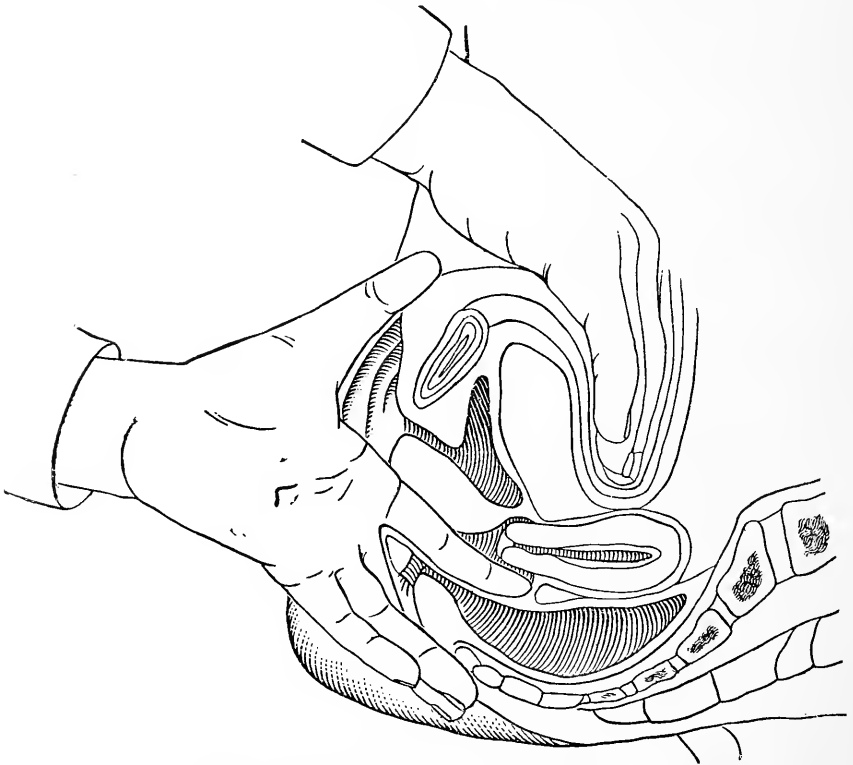


Bimanual Examination.

two hands being separated enough to allow for the depth of the uterus and the thickness of the abdominal walls, the presumption is that the uterus is in a normal position (Fig. 63). The distance the hands are separated is an important consideration, because with lax abdominal walls it is possible to palpate the uterus bimanually, even when it is retroverted, in which case the anterior surface is pressed upon and not the fundus, and the distance between the two

hands is less than in the former case (Fig. 64). With a normal position the body can usually be felt somewhat through the anterior cul-de-sac, while if the finger is carried past the cervix behind into the posterior cul-de-sac it fails to meet with any resisting body.

FIG. 64.



Bimanual Examination in Retroversion.

*Retro-positions.* Backward displacements of the uterus are the most common form of malposition that we meet with. For convenience sake we may recognize three stages: First, where the uterus is tipped backwards about  $45^{\circ}$ , and lies in the perpendicular

axis of the body ; the second, which is the most common, is where the uterus lies still farther back so that the fundus points towards the sacrum ; in the third degree, which is rarely met with, the fundus is crowded down almost to a level with the upper part of the vagina.

*Causes.* The causes of retroposition of the uterus are numerous. Occasionally we have a retroversion occur suddenly and this may be called an acute displacement. This is usually the result of a fall, or of a severe strain, or is caused by lifting a heavy body, or by jumping from a height. More often it occurs gradually and gives rise to symptoms only after it has lasted for a long time. This increases the difficulty of determining its cause. It is possible that there may be such a thing as congenital retroversion of the uterus, although it is not very clear whether this is so or not ; it is certainly a fact that we occasionally find the uterus displaced backward in very young girls, at or just after puberty. In general we may say that the causes of displacements of the uterus are two : either a weakening of the supports, or an increased weight of the uterus. Some of the causes which tend to weaken the supports are standing too long, by which the whole muscular system becomes over-fatigued and the supports of the uterus share in it. Again, the supports may be weakened as a result of general debility, either from some wasting disease, or of slow development. Chronic constipation with its resultant necessity of straining at stool tends to weaken the supports ; so, too, the pernicious

habit of allowing the bladder to become over-distended. Perhaps more important than any of these is imprudent and, especially, improper exercise during menstruation. This results in both causing and keeping up a condition of chronic congestion, which in turn causes a heavy uterus, so that we have here the second feature coming into play. Anything which keeps the pelvic organs in a state of congestion tends to the development of chronic inflammatory conditions, such as endometritis, salpingitis, ovaritis and possibly pelvic peritonitis, all of which are fruitful causes of displacements. These displacements are very frequently found after childbirth, as a result of subinvolution. The ligaments which have stretched during pregnancy are not given sufficient time to recover their normal size and tone, and yield when they are expected to hold up the too heavy uterus. Other causes which may result in a heavy uterus are the development of fibroid tumors and other uterine growths. A third cause of backward displacement of the uterus is pelvic peritonitis. Here the uterus is displaced by the contraction of the adhesions which come as a result of the peritoneal inflammation, and we have, therefore, that class of displacements known as displacements with adhesions.

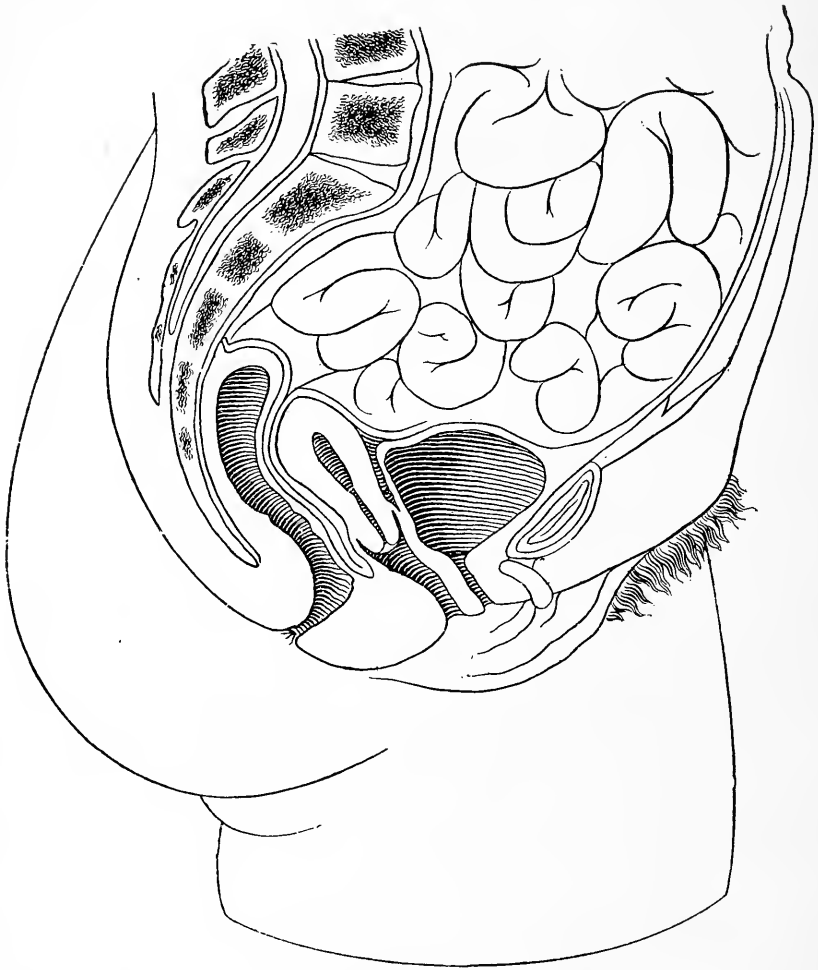
*Symptoms.* It is by no means certain that every backward displacement of the uterus causes symptoms. Many women probably go through life without ever being aware that they have a displacement of the uterus. It is also probable that in most cases symptoms are very slow to develop. Those that first



appear are usually associated with some interference with the circulation of the organ. The uterus begins to be heavy and to drag down on its supports. This gives rise to backache and to a feeling of weight and fullness and to what is commonly called bearing down. This last symptom is particularly associated with retroversion, inasmuch as when the uterus comes to lie with its long diameter in the axis of the vagina it tends to prolapse. Menstruation is sometimes affected, and when this is the case it is usually more profuse than normal. With retroflexion there may be considerable hemorrhage and even flowing between the periods. Coincident with the pain there is very apt to be a leucorrhœal discharge. This is the result of a disturbance of the circulation and a consequent catarrhal inflammation of the lining membrane of the uterus. Reflex symptoms are very common and are very important. The stomach and the head are particularly affected. Pain in the back of the head, headaches and other allied troubles are very frequently remote effects of backward displacements. So, too, are digestive disturbances, especially nausea, flatulency and constipation.

*Diagnosis.* As a rule, in backward positions the cervix points forward in the axis of the vagina and the body is not felt by the hand on the outside. In women with lax abdominal walls the fundus may be felt in retroversion of the first degree, but it is then farther back than normal, and the cervix is pointing forward (Fig. 65). The examining finger fails to find any resisting body through the anterior cul-de-sac,

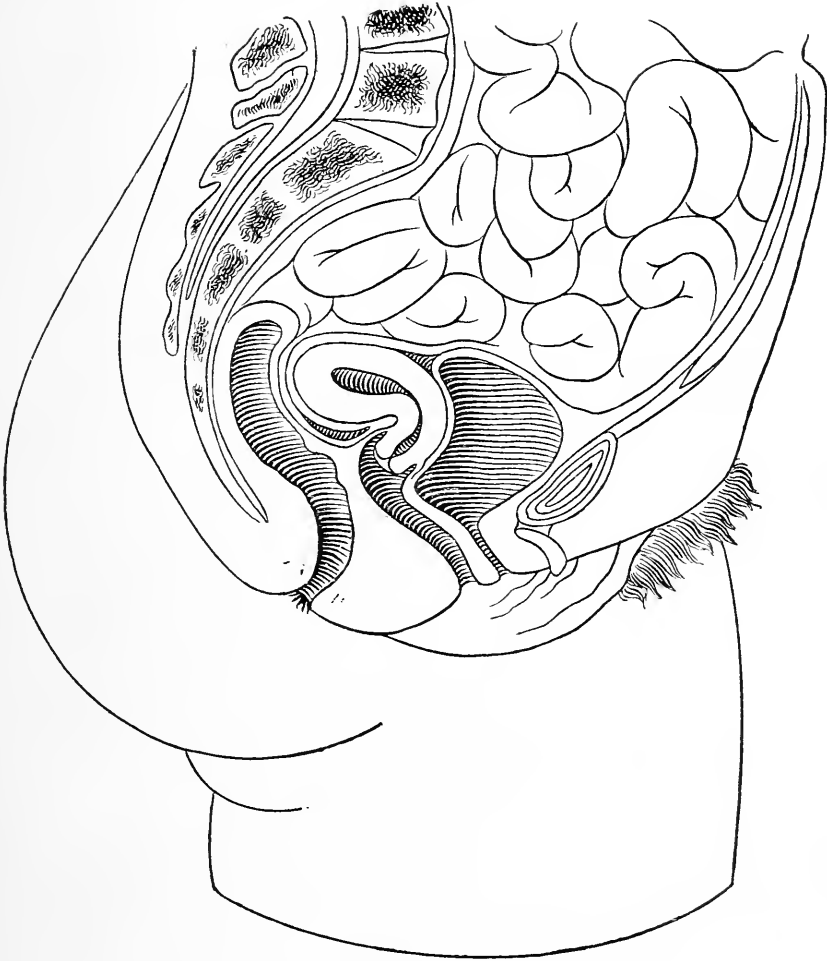
FIG. 65.



Retroversion.

but if carried behind the cervix, feels the body of the uterus continuous with the neck as far up as the finger will reach. The more marked the version the more easily will the body be felt behind. The impression conveyed to the finger in many of these cases is that the cervix is lengthened.

FIG. 66.



Retroflexion.

In retroflexion, which is usually complicated with version, the cervix points in the axis of the vagina, and the angle which the body makes with the cervix can be felt in the posterior cul-de-sac, and the body is easily made out through the vaginal walls (Fig. 66).

The difficulties which may be met with in making

a bimanual examination, such as narrowness of vaginal entrance, thickness of abdominal parietes, and abnormal sensitiveness to pressure on the abdomen, causing firm contraction of the recti muscles, have been spoken of in a previous chapter, and the methods of overcoming them alluded to. Frequently, however, it is impossible to overcome them sufficiently to make a sure diagnosis of the position of the uterus by the bimanual examination alone, and it is necessary, in addition, to make use of the probe.

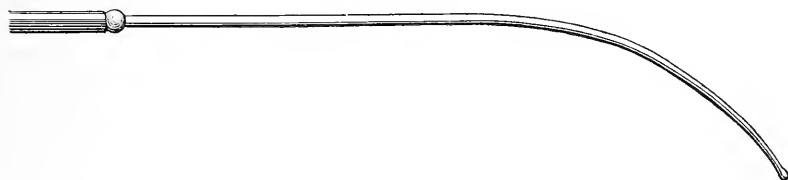
*Probe.* Inasmuch as the passage of the probe will also give valuable information as to the depth of the uterus and the calibre of the canal, it is wise, unless there are some special reasons to the contrary, such as recent cellulitis, suspicion of pregnancy, or fear of starting up uterine hemorrhage, to pass the probe in all cases. This, when carefully done, is not accompanied by any danger.

*Method of Using.* The patient should be placed in Sims's position, and the speculum introduced. It is usually necessary to depress the anterior vaginal wall in order to bring the cervix into view. The probe should be moderately flexible, preferably of pure silver. It should be given a curve corresponding to the supposed direction of the canal as deduced from the bimanual examination. For a uterus in the normal position the curve should be about as in Fig. 67; for ante flexion as in Fig. 68; for retroversion the curve should be very slight, as in Fig. 69; and for retroflexion it should approximate more nearly the normal curve again.

Taking the depressor, or the cotton-stick which

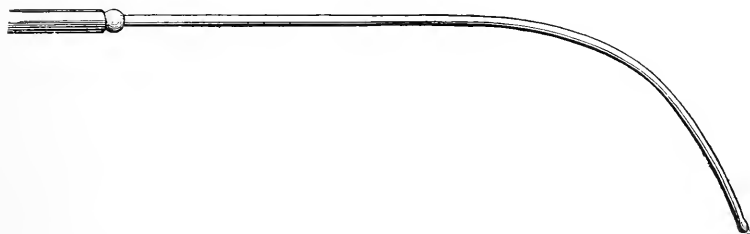
is used as a depressor, in the left hand, the probe should be held in the right and gently passed into the external os. No force should be used, and, if

FIG. 67.



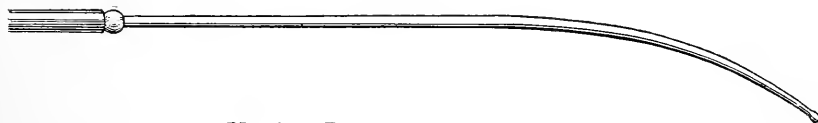
Uterine Probe. Normal Curve.

FIG. 68.



Uterine Probe. Antelexion.

FIG. 69.



Uterine Probe. Retroversion.

the curve is right and no obstruction met with, it will pass easily through the internal os and bring up against the fundus. The resistance met with when it strikes the fundus is peculiar, being moderately firm and slightly elastic. If the probe fails to pass, and hitches at the internal os, which it is apt to do, it should be slightly rotated and the handle somewhat depressed, or carried backward toward the speculum. If these

manœuvres fail, it should be withdrawn and the curve slightly changed. After considerable experience in passing the probe, the sense of touch in this particular direction becomes developed so that the cause of the obstruction can be pretty generally surmised, whether due to too much or too little curve, to catching on one of the rugæ, or bringing up against a constricted internal os. The beginner, however, must try changing the curve first in one direction and then in the other, in the hope that the difficulty may be overcome.

It sometimes happens that the beak of the speculum pushes the cervix forward so as to disturb its relation to the body and cause a flexion at the internal os. To avoid this the depressor should be removed and the speculum somewhat withdrawn, so as to allow the parts to assume their normal relation, when the probe will be found to pass readily.

*Various difficulties.* It occasionally happens that the rugæ of the cervix are so prominent, or the tissues of the cervix so flabby, that the point of the delicate probe catches in the folds of the mucous membrane, and cannot be passed through the internal os. This may be avoided by hooking a tenaculum into the anterior lip of the cervix and making moderately firm traction, thus straightening out the cervix. In using the tenaculum it should be borne in mind that the cervix is quite tough and not very sensitive, and the point should be carried through the mucous membrane into the muscular tissue beneath, so as to insure a good hold.

Or it may be necessary to substitute for the finer

probe the larger Simpson's sound, the knob of which will not be caught in these obstructions. This, however, should not be tried until other attempts have failed.

Another difficulty with the passage of the probe may be from narrowing at the internal os, in which case steady firm pressure will sometimes overcome the resistance.

In the majority of cases, when the point of the probe passes the internal os, there will be a momentary twinge of pain. This is so common that it cannot be said to have necessarily any pathological significance, unless it is quite severe.

When the point has reached the fundus the direction of the probe should be carefully noted, and at the same time the depth of the cavity measured, by grasping the probe with the forceps at the level of the external os, and withdrawing both carefully. The cervix should then be looked at, to see if any blood has appeared from the passage of the instrument, a fact which may be of significance in determining the existence of certain conditions of the lining membrane.

*Treatment—general considerations.* If we find a backward displacement of the uterus the next question to be considered is that of treatment. While a firm believer in the value of local treatment, particularly that by pessaries, for uterine displacements, I would by no means advocate their use in all cases, nor undervalue the benefit to be derived from general measures. Every observer must have seen numerous cases where malpositions of the uterus have been

found which give rise to absolutely no symptoms, and of whose existence the patients had not the slightest suspicion. Again, we constantly meet with cases where some faulty position of the uterus is manifestly due to a general weakness of the muscles of the body, in which those which support the uterus share, where a course of tonic and hygienic treatment has alone served to restore tonicity to the muscles and to correct the misplacement. Such cases are, however, in the minority, and it is my opinion that the larger number of displacements of the uterus need local treatment, and even where ultimate cure would result without, are more successfully and quickly relieved when it is employed.

It is not my purpose to go into the discussion of the general treatment applicable in these cases. It does not differ from that to be employed in other conditions where there is debility, whether from acute disease or inherited disposition to cachexia, or long-continued malnutrition.

The local treatment divides itself into the mechanical by means of pessaries, and the auxiliary measures which either prepare the way for the use of the pessary or aid its effective power. These will be considered in the order above mentioned.

*Treatment by pessaries.* The first consideration in a given case of displacement is: Shall this be treated by pessary or not?

There are cases of retroversion which apparently give rise to no symptoms, and these cases may sometimes be left to Nature, or treated in a general way.



The mere absence of symptoms does not, however, settle the whole question, for it must be considered whether the probable cause is temporary and has ceased to operate, and whether the chances are that, the cause being removed, the uterus will return to its natural position. If the woman is married we should hesitate less than if she were unmarried, and among the poorer classes, who are obliged to work, pessaries are more generally necessary than with the well-to-do, who can spare themselves and have regular and appropriate treatment.

*Objections to pessaries.* There are certain objections to the use of pessaries which are constantly urged by physicians, which deserve notice here. It is a common occurrence to hear physicians declare that they do not believe in pessaries, and urge as reasons that they do not replace the uterus ; that they cause abrasions ; that they weaken the supports of the uterus, and that when once used they must always be worn. These objections arise either because the first attempts at using pessaries are not followed by the complete relief to symptoms which is expected, or from a mistaken idea of how much the pessary will accomplish.

In the first place, every pessary should be accurately fitted for the individual case. Careful measurements should be taken and peculiarities in the size and shape of the vagina and cervix should be considered, and the pessary shaped to meet the requirements in the special instance. It is a grave mistake to diagnose a displacement, for instance, a retroversion, and then to be satisfied with trying a pessary

of some well-known retroversion variety, of a small, medium or large size, as the particular case seems to need. Again, it should always be borne in mind that the sole function of a pessary in all cases of malposition is to hold in place the uterus *after it has been replaced*. As regards backward deviations it is a mistake to suppose that the support will replace the organ; in fact, in most cases, if the pessary is introduced without previous reposition of the uterus it will only aggravate the existing malposition. Forward displacements and cases of prolapse, of course, need no special reposition before the support is introduced, as the organ is brought into position by the pessary.

The objection that pessaries weaken the supports of the uterus finds its justification in the fact that certain forms of pessaries depend for their efficacy upon the elasticity of the vaginal walls. These, in time, become weakened, and a larger pessary is necessary to accomplish the same good. Meigs's elastic ring is an example of a pessary which sometimes acts upon this principle. Other forms of support, such as the Hodge, which act upon the principle of the lever, or those which by their bulk fill up the natural calibre of the vagina and are prevented from coming out by the perineal body closing up the entrance, or in certain cases those with external attachments, are not open to this objection.

All has not been done when the pessary has been once adjusted and apparently fits well. It should be remembered that it is a foreign body, and as such

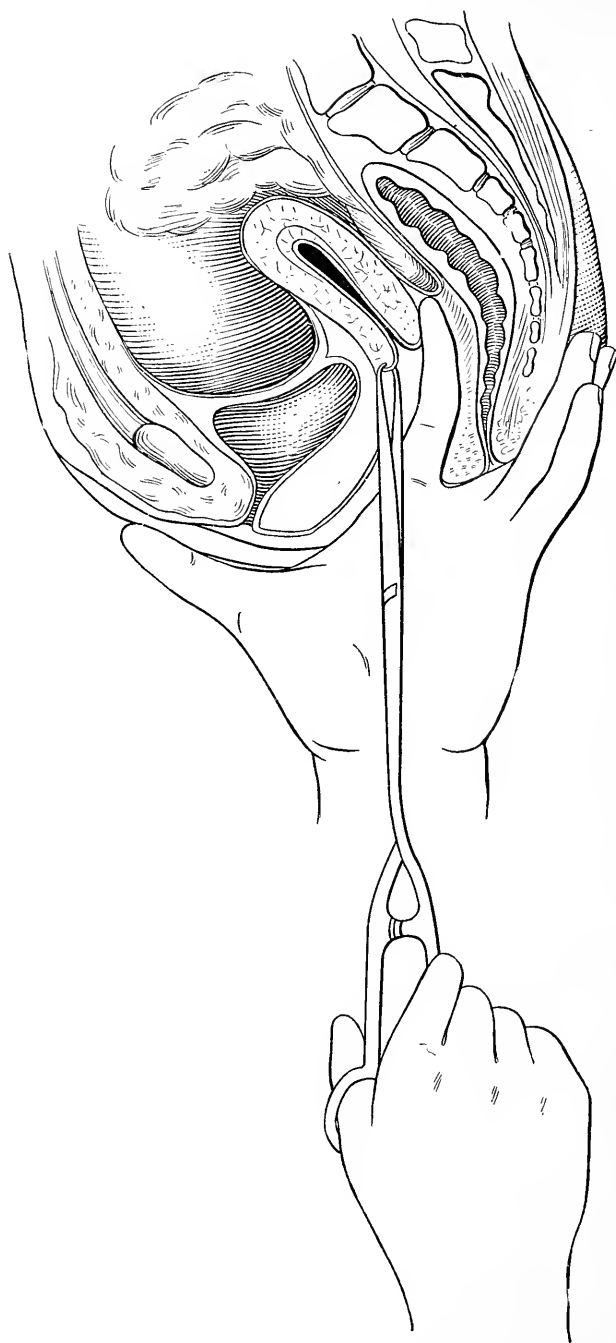
should be carefully watched, removed at intervals, and cleansed, and not, as is so often the case, allowed to remain months and even years without attention.

*Reposition of the uterus.* The treatment of a case of backward displacement of the uterus by a pessary begins with the reposition of the organ. As a rule, the bimanual examination will inform us whether the uterus is replaceable or so bound down by adhesions that it cannot be restored to its normal position. In the latter case other measures have to be considered, which will be described later.

If the uterus or vagina is sensitive to pressure, and in cases of nervous women who are coming under treatment for the first time, it is often wise to prepare for wearing a support, by hot-water injections taken night and morning for a week, and by a few mild applications followed by the use of a cotton dressing for twenty-four hours. In this way the tolerance of the vagina to the presence of a foreign body can be judged of.

*Bimanual method.* There are several methods of replacing the retroverted or flexed uterus. The simplest is the bimanual method. This is applicable when the vagina is large, the uterus not sensitive, and the abdominal walls thin and relaxed. The forefinger, or, if possible, the fore- and middle fingers of the left hand, are introduced into the vagina behind the cervix, with the patient lying on the back. The anterior lip of the cervix is then seized with the double hook (Fig. 70) and traction made to draw the uterus as far down as possible. The fingers are then pushed

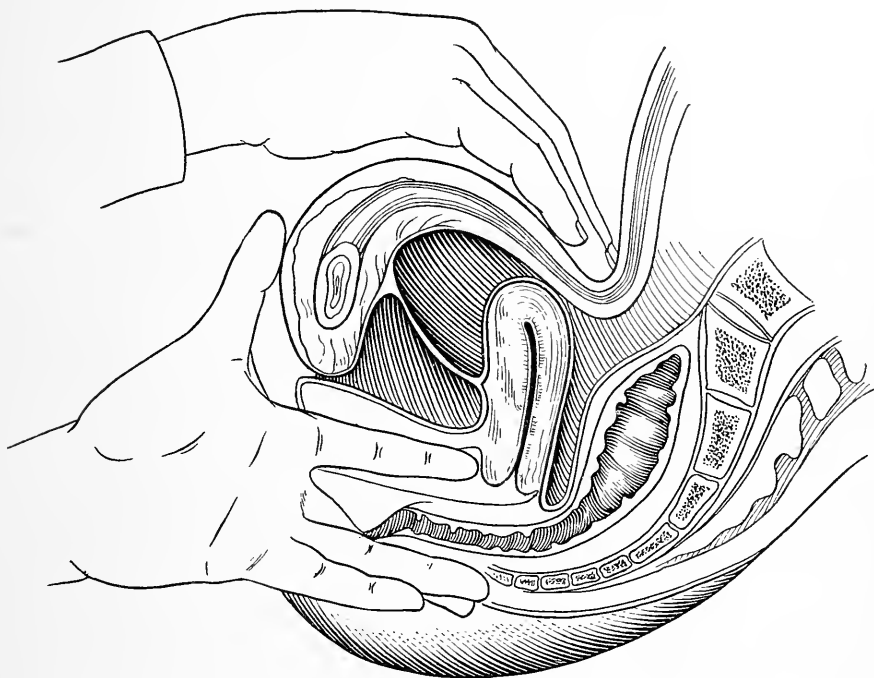
FIG. 70.



First Step in Bimanual Reposition.

as far up behind on the body as possible, and the fundus gradually lifted and carried well forward. At

FIG. 71.



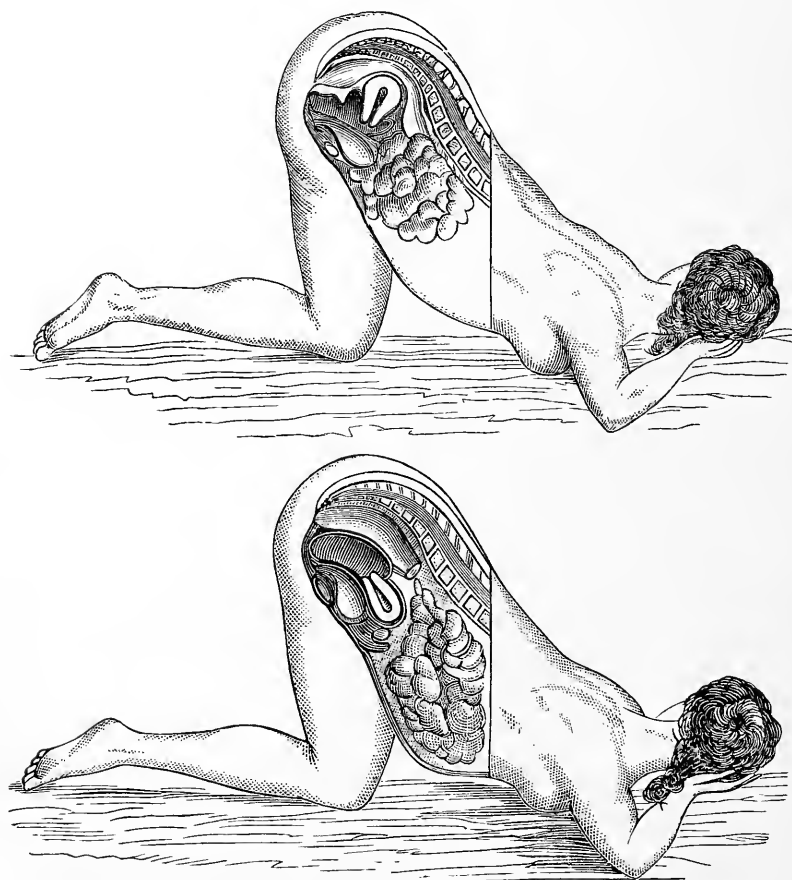
Second Step in Bimanual Reposition.

the same time the attempt is made with the hand over the abdomen to get behind the fundus and carry it still further forward. The finger in the vagina is then swept around in front of the cervix and it is pushed far back into the hollow of the sacrum (Fig. 71). This manœuvre will often bring the uterus into good position.

*Knee-chest position.* Sometimes the action of gravity can be called to our aid by placing the patient in the knee-chest position and retracting the perineum.

This allows air to enter the vagina and the abdominal viscera to fall forward, and at the same time the uterus may rotate on its axis and assume its normal position, a result which may be helped by pressure in the posterior cul-de-sac with the finger or cotton-stick. This position, which is an exceedingly trying one for the patient, is as follows: She is made to kneel upon the table close to its lower end and to bring the chest as

FIG. 72.



The Genu-pectoral Position, Showing its Action in Retroversion.

flat upon the table as possible. This can be done by turning the head to one side and spreading the arms out. The thighs should be perpendicular and the back sloped down regularly (Fig. 72).

As the speculum is introduced and the perineum retracted, air fills the vagina and the pelvic contents fall as far forward as possible. In this position a very effective tampon can be placed in cases of backward displacement with adhesions.

It is sometimes impossible to dislodge the fundus from behind the sacrum, or it may, according to some writers, be caught between the utero-sacral ligaments. This difficulty may be overcome by hooking a tenaculum into the anterior lip and drawing the uterus down. The finger behind pushes the fundus as far forward as possible, when, with a sudden motion, it is withdrawn and the cervix is pushed with the tenaculum into the hollow of the sacrum.

Where the vagina is small and the abdominal walls tense, this method will often fail. It is sometimes well, especially with unmarried women, where the hymen is intact and the vagina narrow, to attempt this method by the rectum, or, if necessary, to give ether, and in that way gain sufficient relaxation to effect reduction.

Repositors, whether instruments especially constructed for this purpose or the sound, should never be used.

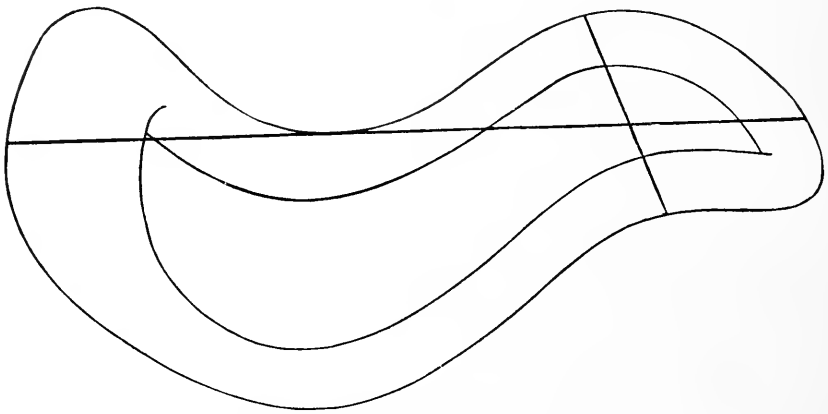
Where there is doubt as to the presence of adhesions, or the sensitiveness of the uterus precludes resorting to any of the preceding measures, a method of slow reposition by packing the vagina is of the

greatest possible value. This method will be fully described when discussing the treatment of malpositions with adhesions.

*Measuring for a support.* Having replaced the uterus, we now proceed to measure for a support. For backward displacements, in the majority of cases, a pessary on the principle of a Hodge will be the most useful. There are three factors to be considered in choosing the pessary to be used : the length, the width and the curve.

*Length.* The length of the pessary is taken across from the upper to the lower end without following

FIG. 73.



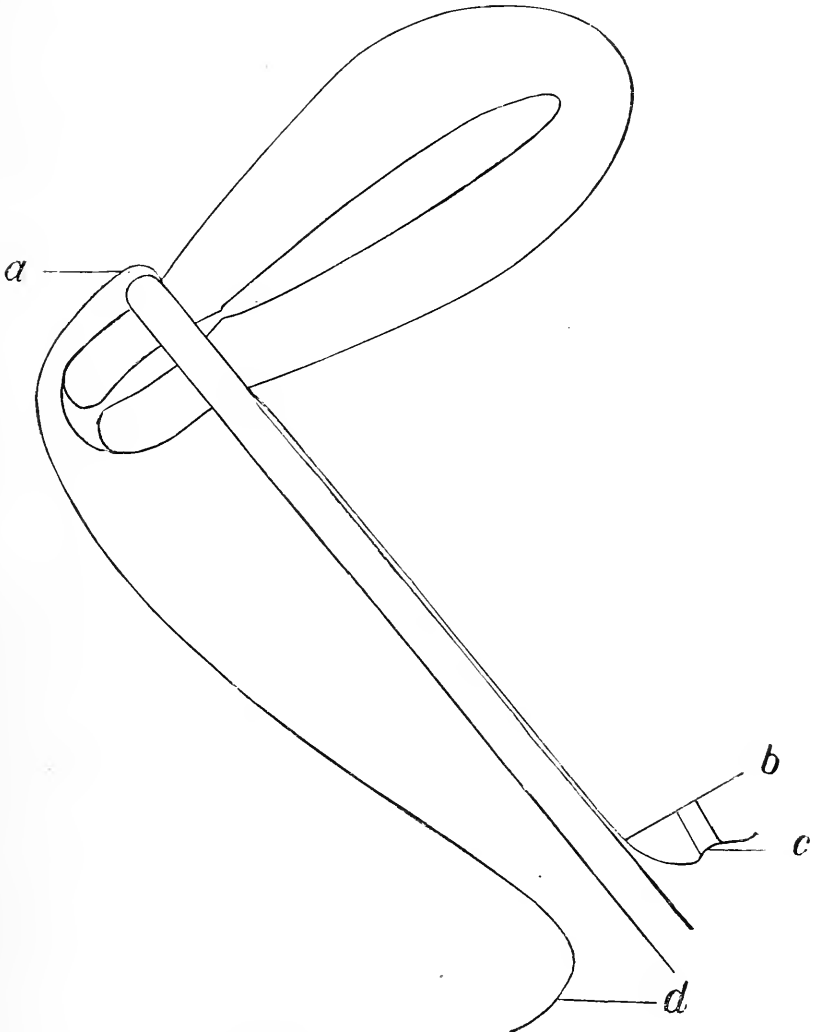
Length and Width of Pessary.

the curve (Fig. 73). It represents the length of the vagina, and is measured with any straight instrument, as, for instance, a cotton-stick. With the patient in Sims's position, the posterior cul-de-sac is exposed with Sims's speculum, and the point where the loose vaginal wall loses itself on the smooth cervix is noted.



This is the junction of vagina and cervix, and in a case of prolapse or of retroversion is the point where the upper bar of the pessary will rest. If the end of

FIG. 74.



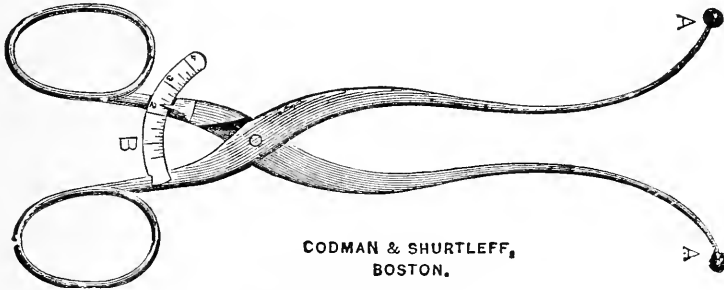
Measuring for Retroversion and Prolapse. *a.* Junction of Posterior Vaginal Wall and Cervix. *b.* Lower Point of Measurement. *c.* Meatus Urinarius. *d.* Perineal Body.

the cotton-stick is placed at that angle, the distance is measured on it to a point on the anterior vaginal wall about an inch back from the meatus urinarius (Fig. 74). This comes usually just inside the hymen or its remains, and in the normal condition of the vulvar orifice insures the pessary being completely inside the vagina. This point is also opposite the thickest portion of the perineal body, and the end of the pessary will, therefore, come where it will be firmly grasped by the strong muscular structure of the perineum and held in position. The distance between these two points being marked in the way indicated on the cotton-stick, it is measured off, and we have the length of our pessary.

*Width.* The support is so made that its width in different parts adapts itself to the varying width of the vagina, being largest at the middle and upper parts where the vagina is distensible, and narrowest at the lower part, where it passes under the arch of the pubes. (See Fig. 73.) It is at this point that the width is of importance, as it is here that it is liable to cut in if too wide, or to slip down too far if too narrow. The width may be roughly estimated by passing the finger from one side to the other, and after considerable practice a fair degree of accuracy may be attained. A better way is with the use of the vaginometer devised by Dr. Baker (Fig. 75). The knobbed points are separated just so far as to allow of their slipping easily through the narrowest portion of the vagina, and while *in situ* the distance between them is read off on the graduated scale near the handle.

The upper part of the vagina is so distensible that accurate measurements are not possible, nor are they

FIG. 75.



Baker's Vaginometer.

necessary. The pessary is gradually widened from the narrowest point, and the degree to which this is carried is determined by our knowledge of the shape of the vagina, as found out by the bimanual examination.

*Curve.* The third element is the curve. The amount of this depends upon the object to be attained. If it is merely to raise the uterus, as in prolapse, the curve need be very slight or none at all. If, in addition to raising, we also wish to carry the fundus forward, as is the case in retroversion, it is necessary to give the pessary a more decided curve. This will vary according to the degree of version present, but should be gradual, and, even in extreme degrees of version, when unaccompanied by flexion, should not attain a right angle.

The curve should be regular and gradual, all angles being avoided. The original Hodge pessary had but one curve and the lower end was rather broad, and to a certain extent was held in place by resting be-

hind the pubic bone (Fig. 76). Later modifications give a second curve at the lower end, and have lengthened and narrowed it to a point (Fig. 77). By this change pressure on the urethra is avoided, and, the longer lower arm of the pessary being grasped firmly by the perineal body, it is made much more effectual in holding the uterus.

FIG. 76.



Hodge Pessary.

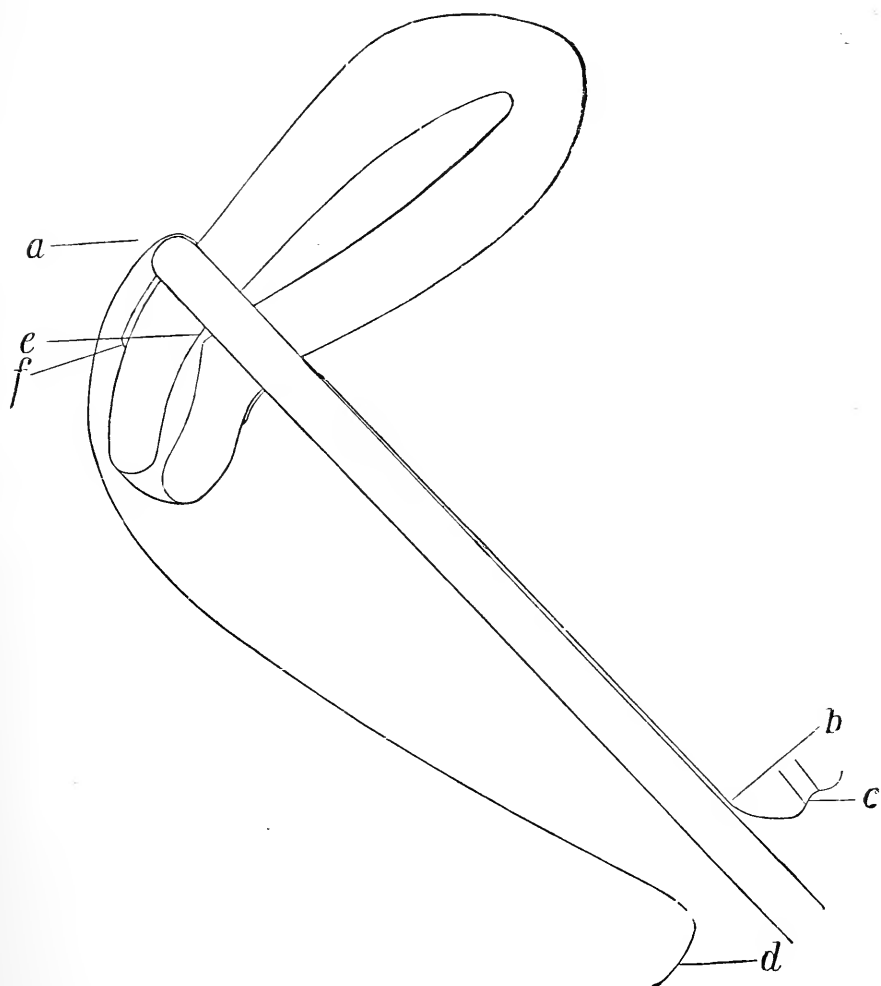
FIG. 77.

Albert Smith's Modification of  
Hodge Pessary.

*Measurement for retroflexion.* In cases of prolapse and retroversion we have essentially the same conditions as regards the uterus, hence our measurements will be the same, and the pessaries will differ only in the amount of curve. In retroflexion, however, we have a new factor to consider. Here the body of the uterus is bent backward, forming an angle with the cervix about the level of the internal os. It is, therefore, necessary in adjusting a pessary for this form of misplacement, to bring the upper portion of the support above the point of flexion. If we measure as before, the upper bar would come to lie in the angle, and the flexion would be only aggravated. The pos-

terior vaginal wall must, therefore, be pushed up as high as possible on the body of the uterus, which, owing to the laxity of the vaginal walls, can usually

FIG. 78.



Measuring for retroflexion. *a*. Point of cotton-stick pushed as high as possible into the posterior cul-de-sac. *b*. Lower point of measurement. *c*. Meatus urinarius. *d*. Perineal body. *e*. Os internum. *f*. Junction of posterior vaginal wall and cervix.

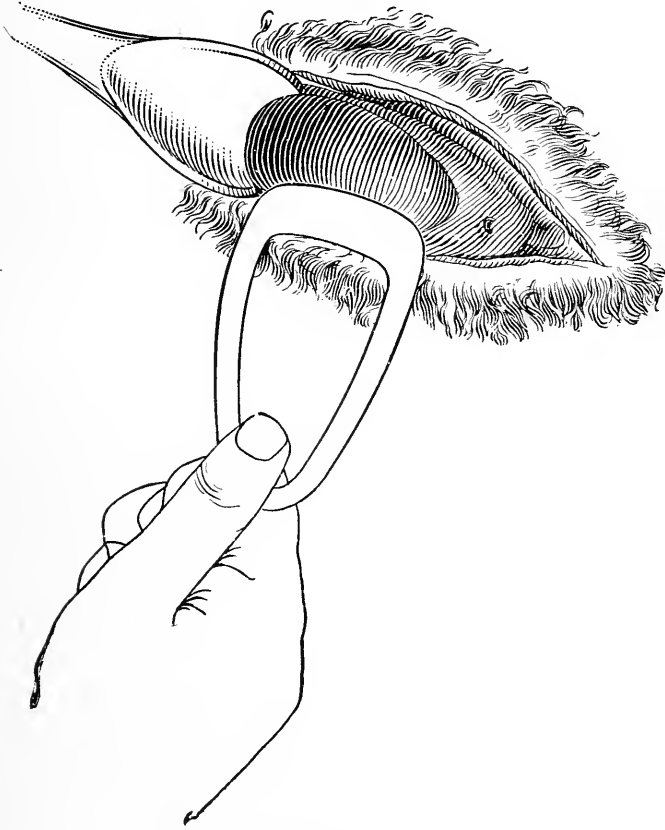
be done sufficiently to get above the internal os (Fig. 78). The lower point of measurement is the same as has been spoken of, and the width is taken in the usual way. The curve is greater, so as to get more leverage, approaching or even reaching a right angle, and the relative length of the posterior arm, as compared with the rest of the pessary, is greater.

The measurements having been taken, it is usually possible in the large stock of pessaries at the instrument maker's, to find one which will fulfil the requirements.

*Introduction of pessary.* The length and width of the model should correspond with our measurements, and the appropriate curve having been given, it should then be introduced. The best position for the patient to assume for this purpose is on the side. The Sims's speculum should be introduced and firm traction made on the perineum. The pessary should then be taken in the right hand and, with the concave side downward, introduced into the entrance of the vagina parallel with the long axis of the vulva (Fig. 79). As it is slowly introduced, the speculum should be withdrawn under constant traction, and, just as it slips beneath the arch of the pubes, the pessary should, with a quick motion, be passed by and given a half turn, so as to bring the convexity posterior. The object of this manœuvre is to give the greatest expansion of the narrow entrance at the moment of introduction, and as in a small vagina there is not room for both speculum and pessary, one is withdrawn just as the other is entered. It is a little manipulation which re-

quires some practice to execute skilfully. If we are dealing with a pessary for a backward displacement,

FIG. 79.



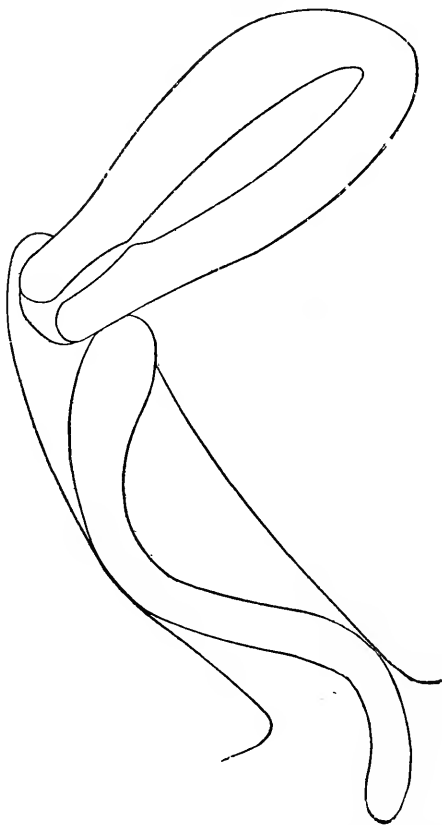
Introduction of Pessary. First Stage.

it is now lying two-thirds within the vagina, in the right position; except that the upper bar is in the anterior cul-de-sac, a position which it naturally takes (Fig. 80). The forefinger of the right hand is now carried in behind the pessary and hooked over the upper part, and it is then carried backward behind the cervix into the posterior cul-de-sac (Fig. 81). To ef-

fect this change of position it is sometimes necessary to draw the pessary slightly downward with the left hand, to disengage it from the cervix.

The patient should now be placed in the dorsal position, and the fitness of the pessary tested by passing the left forefinger between it and the vagina on both

FIG. 80.



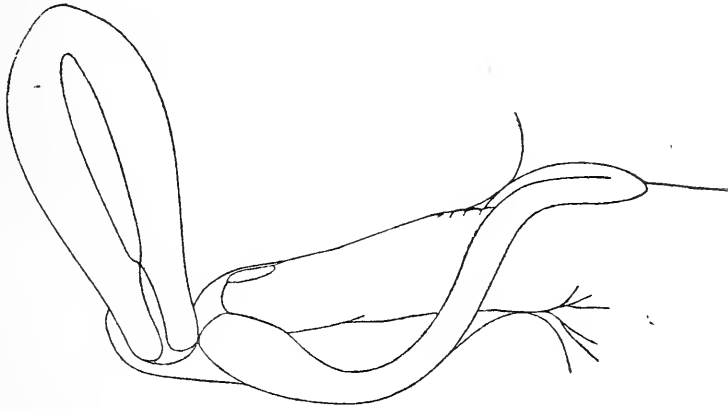
Introduction of Pessary. Second Step.

sides. There should be plenty of room for it to pass freely ; if not, there is danger of its cutting in. If the perineum is intact, the lower end should be hidden



from sight by the hymen or its remains, and, on requesting the patient to strain down, it should not be forced down so as to protrude.

FIG. 81.



Introduction of Pessary. Third Step.

She should now be instructed to wear the pessary for twenty-four or at most forty-eight hours, and then to report again. If it causes marked discomfort she is to come as soon as possible, or to remove it herself in case the physician cannot be found. It is better, if possible, that she should wear it until she can be examined, as the difficulty with the pessary can then be more surely found out. If it is comfortably worn, and is holding the uterus in good position, it may be left another week and then examined again. If there is, on bimanual examination, any doubt as to whether the uterus is still held in its normal position that fact should be tested by means of the probe.

*Care of the support.* The after-care of the pessary resolves itself into one or two hot-water douches a

day, according to the amount of leucorrhœa or the presence of chronic inflammatory processes in the uterus, and the removal and cleansing of the pessary after each sickness. This should be the invariable rule at first, or until the tolerance of the individual to the presence of the support is determined.

In many patients there is a tendency to the deposition of salts on the pessary, and in such cases it should be removed and cleansed every month. So, too, if there is a tendency for the secretions to collect and coat the support. If, however, we find that it keeps clean, and is not uncomfortable, it may be left for two months, or, in exceptional cases, three. It is better, however, to keep the patient under observation, so as to be prepared to modify the support in case it is failing to do its work, or is gradually becoming unnecessary. It is a common occurrence for patients, especially those of a nervous organization, to come of their own accord after menstruation is over, and report that the pessary is not comfortable. Sometimes it is coated with secretions, and sometimes not. At any rate, removing, cleansing and replacing it will give immediate relief. My idea is that as the support should move freely and easily with every inspiration, following the movements of the uterus, if from being somewhat coated from the menstruation, or being slightly displaced by the increased weight of the organ during that process, it fails to slip easily, discomfort will ensue.

The best time for removing it is two or three days after the cessation of the menses. Before removing

the support the position of the uterus should be noted, to see if the pessary is doing all it should. If the position cannot be made out bimanually the probe may be carefully passed.

For the removal of a retroversion or flexion pessary, it is wisest to place the patient on her side, as the traction on it, if the patient is in the dorsal position, might draw the uterus into its faulty position again. Traction is made downward and forward until the upper arm is free from the cervix, when it is given a half turn and withdrawn.

Patients who are obliged to be away for any length of time where the services of a good physician cannot be procured may be taught to remove and replace the simpler forms of pessaries themselves.

Patients usually ask the physician how long they will have to wear the support, or if they will have to wear one always. The question of how long cannot, of course, be answered with any degree of definiteness; the other question can generally be answered in the negative.

The essential factor in most displacements is a weakening of the supports of the uterus, both the ligaments and the muscular structures, vagina and perineum. If the pessary is fitted on the correct principle of supporting the uterus without weakening these structures by stretching they will naturally recover tone and gradually resume their function. We frequently find in cases of relaxed vagina from debility that after a time the pessary which we fitted is hugged too tight by the firmer vaginal walls, and must be

changed for a smaller one. This is a hint to us how to proceed to get rid of the support altogether.

As the general health improves, an indication of which will be increased tonicity of the vaginal walls and uterus, we can assume that the ligaments proper are also growing stronger. A pessary, therefore, should be substituted which is slightly shorter and narrower than the one which has been worn, so as to bring a little more work on the natural supports of the uterus. This may be worn a few months, and then replaced by a still smaller one, and after two or three such changes it may be dispensed with altogether. In this way the uterus gradually becomes accustomed to depending upon its own natural supports. If the pessary is taken away at once the malposition is likely to recur.

It is also important to remember that many cases of displacement are dependent upon, or complicated with inflammatory or other conditions of the uterus which need treatment. All has not been done when the pessary has been satisfactorily adjusted. A support, for instance, may hold a heavy uterus in good position, but in addition it is often wise and necessary to carry out the appropriate treatment for reducing the size of the organ. Until that is done a permanent cure cannot be hoped for.

*Method of altering shape of pessary.* It is sometimes advisable to change the shape of the pessary to meet some new condition, or to modify the curve of one which has been discarded, to suit some new case. This may be done easily in the case of a hard-rubber

pessary at one's office in the following manner: Cover the part of the pessary to be bent with some grease like lard or simple ointment, and then heat over an alcohol lamp by quickly moving the pessary to and fro through the flame. This is necessary in order to avoid burning the gutta-percha and thus removing the polish. Every now and then add a little grease. After a minute or two it will become so softened that it can be curved or straightened. When its shape is modified to suit the requirements of the case it should be plunged into cold water while held in the desired position, when it will become firm and retain its new shape.

*Hard and soft rubber.* Pessaries are usually of rubber, either hard or soft. The advantages of the former are its smoothness and hardness of surface, which render it non-irritating, prevent its absorbing the secretions, and enable it to be easily cleansed. Its objections are that its stiffness makes it hard to insert in cases of narrow introitus, and less easy to wear where vagina and uterus are sensitive to pressure, or it impinges on a prolapsed ovary.

These objections are overcome by the use of soft-rubber pessaries which have as a foundation either copper wire which can be bent to any required shape, or a spiral spring which allows of their being bent for introduction into the vagina, but causes them to resume their original shape. These latter may, however, be permanently bent with the use of considerable force. The objections to their use are that they become foul, and sometimes cause an irritating and ill-smelling discharge, and that they wear out quickly.

Coitus is not usually interfered with by the presence of the ordinary pessaries used for ante- and retro-deviations. A greater degree of care is, however, necessary to avoid injury.

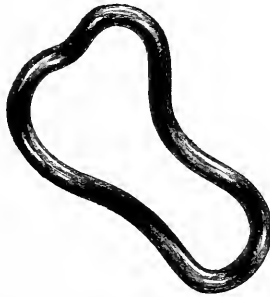
*Abrasions.* Even when the greatest care has been used in the fitting of a pessary, abrasions will sometimes occur. The points to be particularly guarded against are those where the pressure is greatest, and these places should be especially examined when the pessary is removed and cleansed. Such are the posterior cul-de-sac where the uterus rests upon the top of the pessary, the points on the posterior vaginal wall, opposite the greatest curve of the arms of the pessary, and low down on either side where the support takes its bearing against the rami of the pubes. If abrasions are found the pessary should be removed, the vagina packed to hold the uterus in good position, and this course continued until the abrasion is healed. The pessary should then be so modified as to prevent the recurrence of the trouble.

I have been thus particular to give in detail the general principles which govern the treatment of backward displacements by pessary, because there has been a tendency to neglect this method of treatment in favor of operative measures, and I think that in many cases the failure to get good results with supports has been want of patience and lack of attention to small points, which yet are of great importance. It remains only to apply these principles to the particular displacements in question.

*Pessaries for retro-displacements.* The pessary which,

better than all others, answers for these cases is one of those modeled after the Hodge lever type. The curve is modified to suit the degree of displacement, being greater where the retroversion is more marked. There have been modifications made of late years to meet certain conditions, which have added to the applicability of this form of pessary. One of the most universally applicable of these is the Langdon pessary (Fig. 82). It is very comfortable and very efficacious

FIG. 82.



Langdon Pessary.

in holding the uterus forward. There are certain cases where either the posterior cul-de-sac is rather shallow, so that the pressure is greater than usual and there is a tendency to abrasions, or there is unusual sensitiveness of the body, or there is prolapse of one or both ovaries, which are sensitive to pressure. In all these cases a broader surface for the upper arm is desirable, and this is secured by thickening that portion which goes into the posterior cul-de-sac to form a bulb. This is of great advantage in the cases spoken of. The lower end may be narrowed and drawn out

to a point, so as to gain power, and at the same time avoid pressure on the urethra (Fig. 83). Where there is a sensitive prolapsed ovary of one side it is sometimes necessary to prevent pressure on it by depressing the corresponding side of the pessary, thus making it asymmetrical.

FIG. 83.



Thomas's Bulb Pessary with Albert Smith's Modification.

Mild cases of retroversion may be held in place after reduction, by the elastic ring described later. \*

The essential modifications in cases of retroflexion are a greater length of the pessary as a whole, so that it will come up higher on the body of the uterus, and a longer and greater curve. The bulb pessaries are of especial value here. There are cases of retroflexion occasionally met with where a vaginal pessary will not keep the organ in position. In spite of every effort the body falls over the top of the support, and the malposition is only aggravated. Of late years the Alexander operation of shortening the round ligaments has been recommended for these inveterate cases, and the results justify its recommendation after



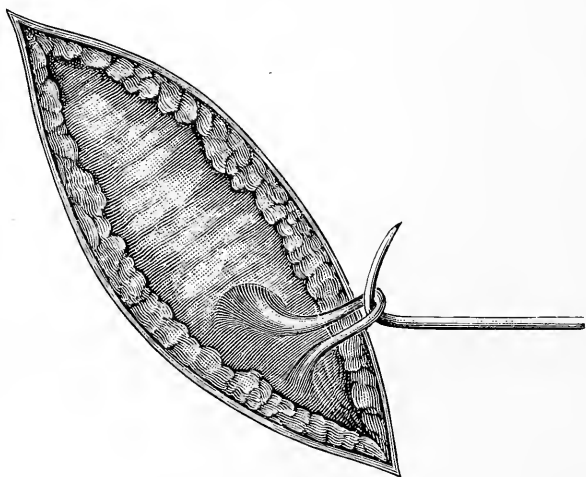
the impossibility of wearing a pessary has been demonstrated.

*Treatment by operation.* So far we have been considering the treatment of backward displacements of the uterus by means of the pessary. A question of vital importance to the patient is, What is the chance of definite cure by this method? From my own observation and the statistics of others, it may be fair to assume that about a third of all cases of backward displacements treated by pessary can be cured in from six months to two years, so that the uterus maintains its normal position without support. In another third of the cases the support can be removed and the patient will be free from symptoms, although the uterus will return to its malposition. This leaves a large number of cases in which the pessary cannot be considered a curative measure. For these cases and those which, for other reasons, this measure is not indicated, operative procedures should be advised. They may be indicated in cases of young girls who are clearly suffering from the displacement, and for whom the fitting and wearing of a support would be objectionable. A second class where an operation would be advisable is those working women who have neither time nor opportunity to give the requisite care and attention to the wearing of the support. Then there is that exceptional class of women who from hypersensitiveness or extreme nervousness cannot bear any form of pessary. For these cases an operation is advisable, and the one which is indicated in all uncomplicated cases of retroversion or flexion, *i. e.*,

cases without adhesions, is the Alexander-Adams operation.

*Alexander operation.* This operation consists in shortening the round ligaments at the point where they immerse through the external inguinal ring. The patient should be prepared as for a cœliotomy. The pubes should be shaved and the abdomen covered with a corrosive poultice. The strictest antiseptic pre-

FIG. 84.

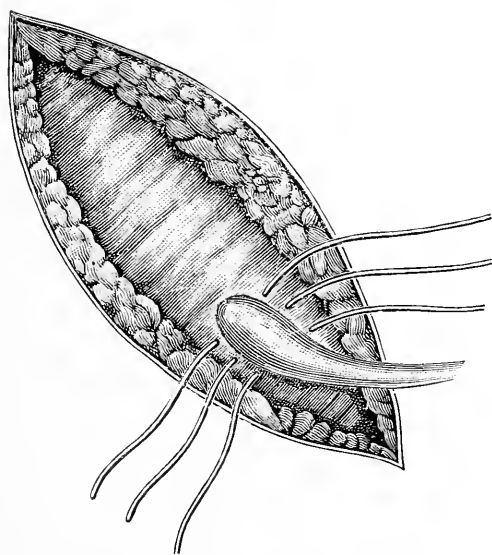


Alexander Operation.

cautions should be observed, both as regards the patient and the physician. Taking as a landmark the spine of the pubes an incision about two inches in length should be made external to it, parallel with Poupart's ligament. It is carried through the skin and the subcutaneous fat until the fibres of the external oblique muscle are reached. The finger will then detect immediately in front of the pubic spine the

opening of the external ring. By pressing on the sides of the ring a small bit of fatty tissue will be seen to bulge. If this is seized and carefully drawn upon, it will usually be found to contain the end of the ligament. Traction should be gentle so as not to tear the delicate fibres, and the slight adhesions to the edges of the ring should be divided with scissors. In this way the ligament may be isolated from the fat and muscular fibres (Fig. 84) and it can then be drawn out to a length of three or four inches. It increases gradually in size and becomes stronger until the sheath

FIG. 85.



Alexander Operation. Sutures in Position.

of peritoneum is seen. This should be pushed back into the ring. A branch of the genitocrural nerve which runs parallel to it should be pushed to one side so that it may not be included in the ligatures. Having

operated on one side, the same manœuvre is carried out upon the other. Then while the surgeon makes traction upon both ligaments, an assistant determines by the vagina that the uterus is in its normal position. The ligament is then fastened by passing through one pillar of the ring, then through the ligament and then through the other pillar, a needle armed with fine silk or catgut. This is tied while the ligament is kept upon the stretch. A second and third similar ligature is then passed (Fig. 85) and the cutaneous wound closed with silkworm gut. The other side is then secured in the same manner. A wet corrosive gauze dressing is applied over both wounds, and over all a tight abdominal bandage. It is a wise precaution to have the patient wear a pessary for a while until the ligaments have grown firmly into their new position.

The external sutures may remain for a week or ten days and the patient allowed to sit up in two weeks. She should be especially warned not to do any hard work for at least three months, and pregnancy should be avoided for a year. Various other operative procedures have been devised, principally methods of vaginal fixation, which have for their object the same result, but none are as satisfactory as the one which has been described.

*Backward displacements with adhesions.* We come now to the consideration of a class of cases which is frequently met with, and which is considered to be among the most difficult that we have to treat in gynecological practice, viz., misplacements with adhesions. In fact, their successful treatment is inter-

fered with by so many obstacles, that some writers consider them as generally incurable. The method of treatment, however, which I will describe does much to remove them from that class.

*Diagnosis of adhesions.* The diagnosis of their presence is often a difficult matter. Ordinarily, in cases of retroversion or flexion uncomplicated by adhesions, the body is so movable on bimanual examination, that we may confidently exclude them. When they exist they prevent the free movement of the fundus, so that even if not felt their presence may be taken for granted. Sometimes they may be felt as tight bands in the posterior cul-de-sac running from the body of the uterus backward toward the sacrum. Oftener, however, they cannot be made out by the touch, and the immobility of the fundus is our sole guide to their presence. The history of previous attacks of an inflammatory nature about the uterus confirms the probability of the existence of adhesions, though they are very often found where no such trouble has occurred.

When there is doubt whether the uterus is adherent or not, the method of replacement which we employ will soon decide. This method is by packing the vagina with cotton pads soaked in glycerine.

*Packing the vagina.* The method of packing the vagina to overcome adhesions is as follows: The patient is placed in Sims's position, and the cervix and posterior cul-de-sac exposed with Sims's speculum. The vagina is freed from mucus with cotton-sticks. A dressing is then seized with the long

uterine forceps, is placed high up behind the cervix, and held in place with the beak of the speculum; a second and a third are then placed close to it, and one or two at each side, leaving the anterior cul-de-sac free. This packing is carried on until the posterior and lateral cul-de-sacs are filled to a level with the os externum, each dressing being held in place by the point of the speculum until the next one is in position. Sufficient force should be used to make a firm, solid mass, and the speculum should be moved freely up and down, so as not to include it in the packing. It can be best controlled by the operator, who can grasp it by the free blade, and have it completely at his command. When the space around the cervix has been well filled, the whole vagina should be systematically packed down to the outlet. Pressure should be made from the centre outward, so as to get a firm column against which the effective wedge which is behind the uterus may get a bearing. The vagina should be filled up rather more in the direction of the rectum than of the bladder.

The best time to begin a course of packing is two or three days after the cessation of the menses. It may be left in three or four days, preferably three to begin with, as the first packings will grow loose in that time.

For removal the patient should be placed in the Sims's position, and the tampon should be removed piece by piece with the tampon extractor. This is a slender instrument having a double screw at the end, which is twisted into each piece as it comes into view,

The highest pieces are sometimes difficult to find, but they should be carefully sought for, as, if allowed to remain, they become foul and are a source of irritation.

A second packing is then placed, and the same process repeated until the sickness is expected, when it should be discontinued, to be resumed after the catamenia.

After two or three packings the position of the uterus should be tested by carefully passing the probe. If considerable improvement is found, it may be well to apply a moderately tight pessary to be worn during menstruation, so as to hold all that has been gained. When the uterus is found to have regained its normal position a pessary should be adjusted according to the rules laid down earlier in this chapter. It should be remembered, however, that the vagina has become somewhat stretched by the packings, and we should either take rather short measurements at first or be prepared to substitute a smaller pessary after an interval.

*Preparatory treatment.* Not every case is suitable for this treatment at first. In some cases there is very apt to be sensitiveness of the vagina and uterus, and it is often wise to precede the systematic packing by placing, for a few times every second day, several cotton dressings, which may be allowed to remain from twelve to twenty-four hours, and by hot-water douches in the interval. But neither sensitiveness, nor even thickenings, the result of inflammatory processes, are contra-indications to this method of treatment. In fact, a firm tampon will often markedly relieve pain, and the action of the pressure and glyc-

erine seems to tend toward the absorption of inflammatory deposits.

More relief from pain may sometimes be secured by saturating the upper pads in a mixture of glycerine and iodoform (10 : 1), with a drop of the oil of peppermint to the ounce to disguise the odor.

The dressings should not be allowed to remain longer than four days for two reasons. In the first place, they begin to get foul by that time, and might prove a source of irritation if left longer. This difficulty might be avoided by soaking the dressings in a weak solution of carbolic acid or thymol, but the second reason for removing them at the end of the third or fourth day makes such treatment of them unnecessary. Under the constant pressure of the packing the vagina becomes stretched, and a tampon, which is tight when placed, becomes loosened, so that after that length of time it fails to be of any service, and should be removed. If any of the lower pieces become loosened, the patient should be instructed to remove them, as they are apt to cause considerable annoyance. There is sometimes difficulty with defecation or with micturition. If the former, the bowels should be moved with cathartics (not by injections) for a few days until the parts become more used to the presence of the tampon. If there is difficulty with micturition, or a more frequent desire to pass water, the trouble may be relieved somewhat by substituting a wad of dry cotton for the few lowest glycerine dressings.

The patient may go about as usual; in fact, it is



rather an advantage for her to exercise, especially in walking. The slight up-and-down movement of the body during locomotion and the strengthening of the abdominal muscles tend to elevate the uterus toward its normal position.

Where additional force seems essential to make the uterus budge, it may be gained by packing while the patient is in the knee-chest position, by which the fullest depth of the vagina is attained. In some cases where the adhesions seem to be high up on the body of the uterus, and at one side, it is impossible to bring the fundus forward. It may, however, be swung round so as to make a lateral version or flexion, which will often give all the relief required. Where we have a small uterus, a short cervix and very little cul-de-sac, packing will often fail, as it is impossible to get behind the uterus to press it forward. The tampon in these cases merely raises the uterus as a whole to a higher level without modifying the flexion.

The time necessary to overcome the adhesions varies with the individual case. With cases which show improvement up to a certain point, but cannot be completely replaced, it is often necessary to suspend treatment, and fit as large a soft-rubber bulb pessary as can be comfortably worn. This will keep all that has been gained, and perhaps accomplish a little more. Patience both on the part of the patient and the doctor is very necessary with this form of treatment. If after a month's steady effort no marked gain is observed, it is wise to give ether and attempt

the reposition by the use of moderate force. If that fails and the patient is fairly comfortable with what has been attained, a support should be adjusted. If she still suffers enough to warrant it, laparotomy and the breaking up of adhesions and stitching the uterus to the anterior abdominal wall is appropriate treatment.

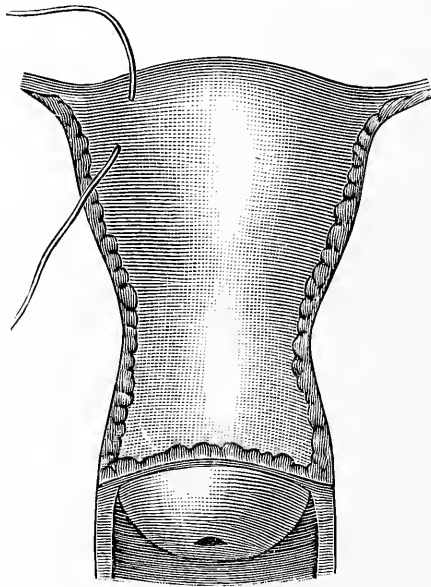
I have dwelt thus at length on this method of overcoming adhesions by packing, because we have in it a way of treating these difficult cases which is both safe and often effectual. It is, at any rate, the one non-surgical method which holds out the best chance of benefiting these trying and often desperate cases. Other methods which have been proposed have for their aim the loosening of adhesions by the use of force, either with instruments or by the fingers. The use of a sound or other repositor is a dangerous procedure which cannot be recommended. The method proposed by Schultze of separating the adhesions with the fingers from the rectum under ether often accomplishes very little more than systematic packing will effect.

*Suspensio uteri.* While it is true that many cases of retroversion and flexion with adhesions can, so far as the symptoms are concerned, be materially benefited by the measures which have just been described, yet there are cases which demand operative relief. The Alexander operation is only applicable to cases of non-adherent uterus. The breaking up of adhesions under ether is accompanied with too much risk to make it a wise procedure. Separating the adhesions through an

incision made in the vagina, while successful in some cases, yet leaves too much to the sense of touch to be a wise measure. For such cases opening the abdomen, freeing the uterus and stitching it to the abdominal wall is the most appropriate treatment. The operation is performed in the following manner: When the abdomen has been opened after the method detailed more fully in the chapter on ovarian tumors, the condition of the pelvic organs is carefully inspected. This will be very much facilitated by having the patient in the Trendelenberg position. The presence and character of the adhesions, the condition of the tubes and ovaries can all be made out and the limits of interference also determined. If the tubes and ovaries are healthy they, as well as the uterus, should be freed from their adhesions. Should, however, these appendages be diseased, one or both, as circumstances demand, should be removed. The uterus should then be brought forward and a point determined on the anterior abdominal wall to which the fundus can be easily brought. A needle armed with a fine silk ligature is then passed through the anterior upper corner of the uterus in front of the round ligament (Fig. 86). This may be made to penetrate quite deeply into the uterine tissue. The suture is then passed through the peritoneum covering the anterior abdominal wall, a distance of perhaps half an inch being included in the stitch. A similar suture is then passed through the other corner of the uterus and the abdominal peritoneum. These sutures are drawn up tight and the ends cut off. It is important in this operation not to go deeper

than the peritoneum for the reason that, if the fascia and muscles are included in the suture the uterus will be too immovably fixed, and this is likely to give rise to trouble in case of future pregnancy. Where the sutures include the peritoneum, in a short time the uterus draws away from the abdominal wall and is connected with it merely by two thin bands of tissue. These are strong enough to hold the uterus and, at the same time, to allow enough mobility to permit a normal enlargement of the uterus in case of pregnancy.

FIG. 86.

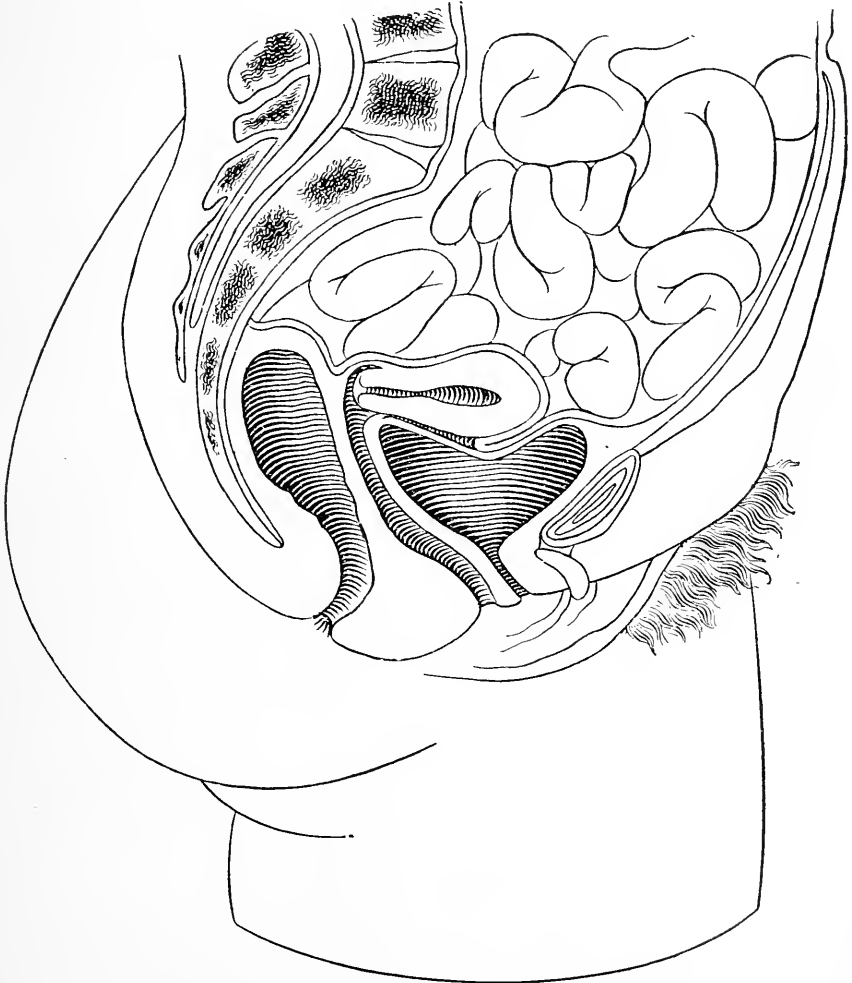


Position of Sutures for Suspensio Uteri.

*Anteversion.* This is a comparatively rare displacement, that is to a pathological degree. It is only an exaggerated normal position, and as such may exist to a marked degree without giving rise to any symptoms.

It is usually an accompaniment of a generally debilitated condition of the system. This lack of strength

FIG. 87.



Anteversion.

extends to the ligaments which support the uterus, and as a consequence the fundus sinks downwards, towards the symphysis pubis.

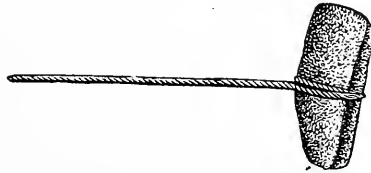
This displacement is detected on bimanual examination by feeling the body of the uterus lying nearly parallel with the anterior vaginal wall, and the hand over the abdomen easily finds the fundus and posterior wall of the uterus just above the pubes. It is differentiated from an ante flexion by the absence of an angle at the junction of body and neck (Fig. 87). The cervix points more or less towards the hollow of the sacrum and is often difficult to reach, it seems so much higher than normal. As has been said, it may and often does occur without symptoms. When these are present they are pain in the back, probably due to traction on the utero-sacral ligaments, a sense of weight and dragging, and frequent and possibly painful micturition, due to pressure on the bladder. This last is the most characteristic symptom, and, when present, points more clearly to the necessity of raising the uterus than any other. Dysmenorrhœa may also be a symptom.

Where these evidences of pelvic trouble are present, and no other abnormal condition is found to account for them, we may conclude the necessity of some mechanical support to the uterus.

*Temporary cotton support.* Before adjusting a pessary it is well to test the tolerance of the vagina to its presence, and, at the same time, to gain additional evidence as to what effect it will have when placed, by making use of a temporary cotton support. It is my custom to insert into the anterior cul-de-sac two cotton dressings, rolled up into small rolls, and held in place by a third (Fig. 88). These are placed transversely

across the vagina, and have strings attached by which they may be withdrawn. The patient is instructed to wear them for forty-eight hours, and then to remove them and take a hot-water douche. She should be warned that they will cause some watery discharge, which will probably necessitate the use of a napkin. She is to make no change in her customary occupa-

FIG. 88.



Cotton dressings rolled up.

tions, and is to note carefully any effect on the symptoms while wearing the dressings. Usually, even this slight support will afford some relief, and will confirm us in our opinion that a permanent pessary will be of marked benefit.

Anteversion is often a result of debility, which is shown by a relaxation of the uterine ligaments and vagina. The uterus sinks lower in the pelvis without changing materially its relation to the axis of the vagina. This might very well be considered a form of prolapse, and its treatment is by raising the organ as a whole to a higher level. The pessary which I have found most useful for this purpose is one which is also applicable to many cases of beginning prolapse with slight retroversion. It is an elastic ring of large calibre (See Fig. 91) which adapts itself to the shape of

the vagina, and supports the uterus less by its elasticity than by its friction on the vaginal walls.

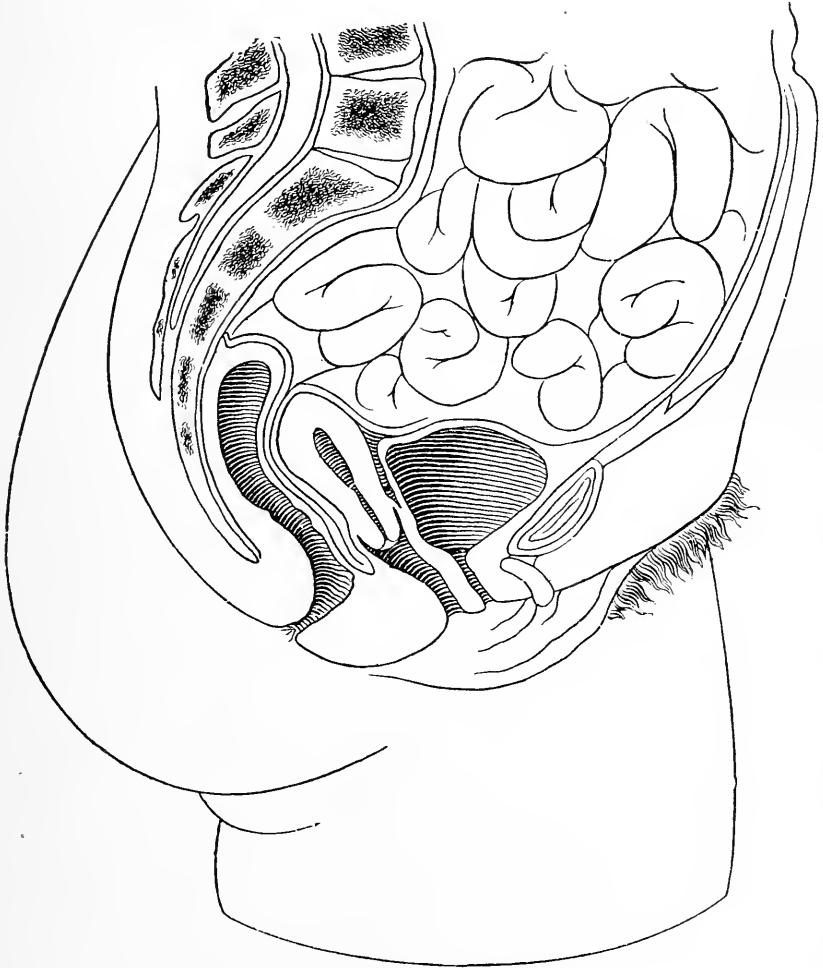
*Prolapse and procidentia.* By prolapsus uteri we understand that condition of things in which the uterus sinks in the pelvis and approaches the outlet of the vagina. Where it appears outside it is called procidentia. It will be easily seen that there may be all degrees of prolapse and procidentia, from the slightest sinking, to the complete extrusion of the uterus and vaginal walls with part of the bladder and rectum outside the vaginal orifice. One less easily recognized form of prolapse is where the uterus, while maintaining its normal relation to the vagina of moderate anteversion, sinks lower in the pelvis, a condition of things which is usually associated with a relaxed condition of the vaginal walls and occurs in debilitated women, and perhaps as often among the unmarried as among the married. Such a falling can occur, however, only within very narrow limits. Usually prolapse presupposes some retroversion, and the uterus, having fallen back into the axis of the vagina, sinks lower and lower (Fig. 89). Sundered and ruptured perineum is the most frequent predisposing cause of this form of prolapse.

*Causes.* We occasionally find prolapse developing suddenly as a result of some severe strain. Usually it is of slow development, and sometimes the result of a heavy uterus without there being any lesion of the vaginal outlet. When this is the case it is usually moderate in degree. By far the most common cause of a downward displacement of the uterus is a loss of



the integrity of the pelvic floor. This is the result of a laceration of the muscles which compose the pelvic floor and surround the mouth of the vagina, consequent

FIG. 89.



Retroversion and Prolapse, First Degree.

upon childbirth. As a result of these accidents of labor, we have a tendency to a heavy uterus, and a loss of

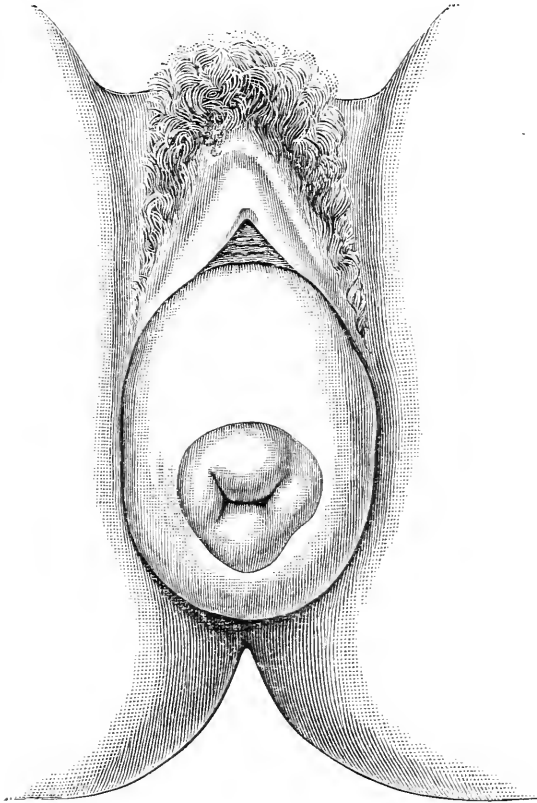
the supporting power of the pelvic diaphragm. There are two factors, therefore, which work to produce a prolapse of the uterus: The tendency to remain large, which causes it to sink to a lower level. There is also, at the same time, apt to be a subinvolution of the vagina and a tendency of the lower part of the vagina to prolapse. This draws upon the too heavy uterus and it is inclined to become retroverted and the force of gravity has better chance to operate. The prolapse may be of any degree from the slightest sinking to a lower level, to complete procidentia, where not only the uterus, but a large part of the bladder and the lower part of rectum are outside the vulva. The symptoms are those of aching in the back and legs, fatigue on standing and, in severe cases, the feeling of a body between the thighs which interferes with locomotion. There is constipation, and where the anterior vaginal wall is prolapsed we may have frequent micturition from the irritation of the bladder caused by its inability to empty itself.

*Diagnosis.* The lesser degrees are not easily diagnosed with the patient on the back, as the uterus falls away from the vaginal entrance. An unusual degree of mobility may sometimes be made out by asking the patient to strain as if at stool, when the uterus will be forced down beyond its normal position. A better way is to examine the patient when standing, by which method slighter degrees of mobility may be recognized.

When the uterus approaches or protrudes beyond the vaginal outlet the diagnosis is easy. The cervix

uteri with the os is seen, and on passing the probe the fundus will be found at a lower level than it should occupy. This will serve to differentiate it from hypertrophic elongation of the cervix where the fundus

FIG. 90.



Complete Procidentia.

is at its normal level. In procidentia also there is always some prolapse of the vaginal walls, which is not the case in hypertrophy of the cervix.

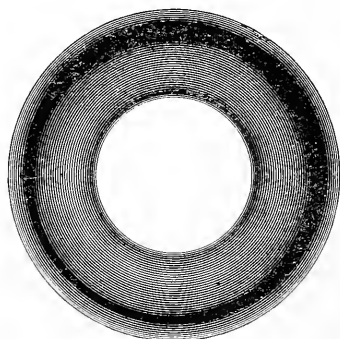
In complete procidentia (Fig. 90) we find a large tumor outside the vulva, composed of the uterus with hypertrophied and usually lacerated cervix, cystocele

and rectocele. If it has been outside a long time, there are usually abrasions, the remaining surface being dry like parchment.

*Treatment.* Pessaries are not so satisfactory in this form of displacement, because, the difficulty being a mechanical one, they are not curative, and the patient is likely to be obliged to wear one all her life. Occasionally where operation for one or another reason is not advisable we are forced to make use of them.

In cases of simple prolapse, especially from debility, the ordinary Hodge pessary with a slight curve is often the one which can be used to the best advan-

FIG. 91.



Meigs's Elastic Ring.

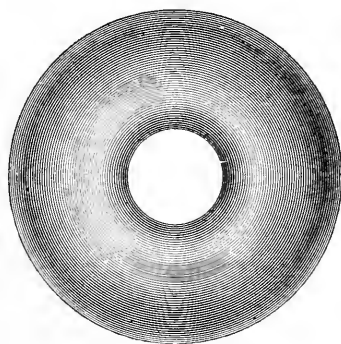
tage. Its application does not differ from that in retroversion and flexion.

Meigs's large calibre elastic ring is also a good one (Fig. 91). Its advantages are the comfort with which it is worn, and the fact that the patient herself can remove and replace it without any difficulty. As it is introduced into the vagina it naturally falls into its proper position. As it is soft rubber, and more easily

becomes foul than some other varieties, it is better for being looked after once a month. It is especially good where the patient is travelling, or where she cannot see the physician, as she can take care of it herself, and as it is so flexible it will not cause abrasions.

In cases of aggravated prolapse where there is a tear of the perineum, or where there is complete procidentia, there is sometimes enough of a perineal body left to retain a pessary within the vagina, provided it is large enough to distend the canal, and to

FIG. 92.



Inflated Rubber Pessary.

resist displacement from its size. Pessaries which are occasionally useful in this way are the thick, elastic Meigs's rings spoken of above, which distend the upper part of the vagina and take a certain amount of support behind the pubic arch; and the inflated rubber pessary, which also completely fills the vagina (Fig. 92). Very often, however, no intra-vaginal support will be retained, and operative treatment is imperatively demanded.

*Operative treatment.* The condition is rarely so

aggravated that the patient cannot be cured by one or more plastic operations. Sometimes all that is necessary is to restore the perineum after the manner described in the preceding chapter. In the worst cases several operations are often necessary. In cases of complete procidentia there are apt to be found an enlarged uterus, the cervix lacerated, the perineum gone and a condition of cystocele and rectocele. In these cases some preparatory treatment is often necessary. The patient should be put to bed, the uterus returned and kept in position by means of wool tampons soaked in glycerite of tannin. This will exert a depleting effect upon the tissues. Should there be abrasions, as not infrequently happens in these aggravated cases, they should be healed before operating. After the condition has been improved in this way there may be a series of operative procedures necessary. To insure success the laceration of the cervix should be operated upon, or if there is much hypertrophy the cervix may be amputated. Either of these operations will tend to lighten the uterus. The cystocele should be treated by an operation on the anterior vaginal wall, and last of all the perineum in one or another of the methods already described.

Occasionally these plastic operations, although thorough, do not succeed in keeping the uterus in position. For such cases the Alexander operation may be added to the others, or, what would be most likely to succeed, ventrofixation in the strict sense of the term. Hysterectomy has been done for these conditions, but it is not, in my opinion, good surgery.

## CHAPTER VIII.

### ANTEFLEXION OF THE UTERUS.

ANTEFLEXION, although often considered a displacement of the uterus, is not so in fact. It is a fault of development by which the uterus instead of growing straight, grows crooked. This may have its origin in foetal life or in childhood, more probably the former. At puberty we find the uterus in the bent condition. It is not acquired, nor the result of any habits of life or accidents. For convenience, we speak of anteflexion as of three varieties : of the neck alone (Fig. 93), of the body alone (Fig. 94), and of the neck and body, (Fig. 95). This division is merely of value in estimating the degree of the flexion, inasmuch as the symptoms and treatment of all three varieties are the same.

*Symptoms.* The symptoms of this malformation are principally two, dysmenorrhœa and sterility. The dysmenorrhœa which is associated with anteflexion of the uterus has a peculiar type and is sometimes called obstructive dysmenorrhœa but this is only partially correct. It usually appears simultaneously with the flow and lasts a varying length of time, from a few hours to a day. As the flow increases, the pain usually diminishes, and as the flow reaches its height, the pain ceases. It is occasionally paroxysmal in character, and these paroxysms of pain seem at times to be associated with the expulsion of a clot. The pain as

a rule is referred to the lower abdomen, less often to the back. It is sometimes so severe that it amounts

FIG. 93.



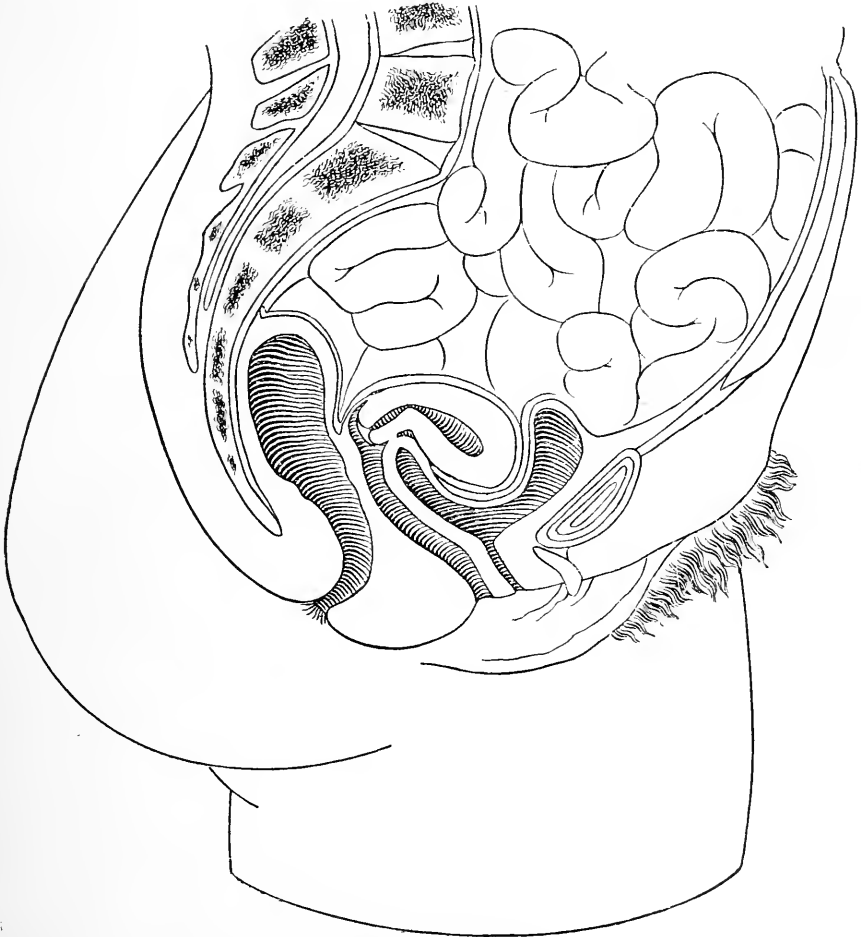
Anteflexion of Neck.

to agony and the patient may roll on the floor in vain efforts to obtain relief. Nausea is sometimes an accompaniment, and occasionally convulsions occur.



The pathological conditions which underlie this form of dysmenorrhœa are stenosis of the canal and sensitive-ness of the internal os. Though many authors deny that the dysmenorrhœa in these cases is caused by a

FIG. 94.



Anteflexion of Body.

stricture and attribute it to an accompanying endo-cervicitis, yet the results of the examination of patients

with antelexion, leaves no doubt in my mind that there is an actual narrowing of the canal. There may be, it is true, an endocervicitis accompanying this con-

FIG. 95.



Anteflexion of Neck and Body.

dition, but this is comparatively rare, and in the majority of cases there is absolutely no evidence of any inflammation of the lining membrane of the uterus. In ad-

dition to the stenosis, there is a marked sensitiveness at the internal os. This is clearly demonstrated by the passage of the probe. As soon as the tip of the instrument reaches the region of the inner mouth of the womb, there will be a sudden expression of severe pain, and the patient, if questioned, will declare that the pain so caused is exactly like that she suffers when menstruating. The explanation of the dysmenorrhœa associated with the anteflexion is that at the beginning of the menstrual flow, the passage of the small amount of blood through the narrow os internum and by the sensitive tissues causes pain. The canal is narrowed even more than usual, by the swelling of the mucous membrane which is characteristic of the beginning of menstruation; later, when the uterus softens, as it does during the menstrual flow, the tissues become relaxed, the canal slightly straightened, and the sensitiveness ceases. To the dysmenorrhœa, which is the symptom for which we are consulted in early life, is added that of sterility for married women. While it is not impossible for pregnancy to occur under these conditions, yet it is unlikely.

*Diagnosis.* The diagnosis of anteflexion is easily made by the bimanual examination, the examining finger of the vagina determining the direction of the cervix. If the flexion is of the body alone, the cervix will point in its normal direction, if of the neck, or of both body and neck, the cervix will point in the axis of the vagina. On making pressure over the abdomen with the right hand, we are able to feel the body of the uterus bent forward against the finger in

the vagina pressing upwards through the anterior vaginal wall and bladder. The angle made by the body and neck in the anterior cul-de-sac is readily appreciated on careful palpation.

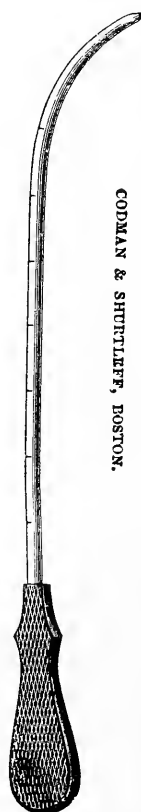
FIG. 96.



FIG. 97.



FIG. 98.



Uterine Probe.      Simpson's Uterine Sound.      Peaslee's Sound.

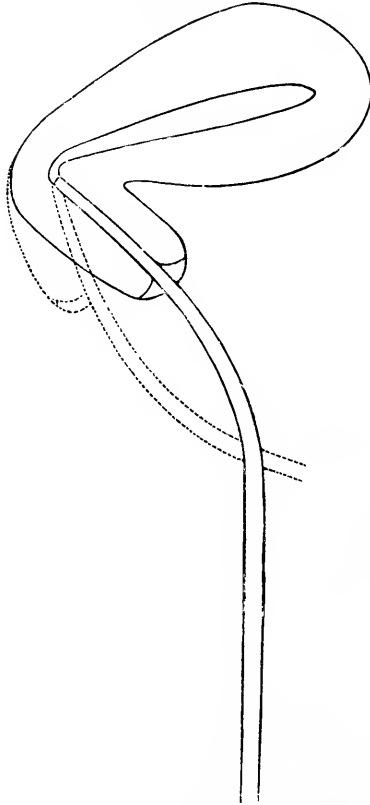
*Passage of probe.* The existence of a so-called stricture of the canal of the uterus is determined by the passage of instruments of different calibre. It is very rare that the small flexible silver probe (Fig. 96), which is the only instrument that in the majority of cases it is necessary to pass into the womb, will fail to find its way. Much patience and skill are often required to find the right curve and direction, but the canal is seldom so contracted that it will not go by. If there is reason to suspect a narrowing, larger instruments, such as the sounds of Simpson (Fig. 97), and Peaslee (Fig. 98), should be successively tried. The normal canal will usually admit Peaslee's sound, which has a diameter of 5 mm. Should Simpson's sound, which is smaller, fail to pass, there is decided narrowing. It sometimes is the case that after the instrument has been passed in as far as the internal os, it is arrested. If now steady pressure be kept up for a minute or two the sound will slip by with a jerk. The sensation conveyed is often that of passing over a fibrous band, which yields on pressure sufficiently to allow the instrument to pass, and then grasps it firmly again.

*In anteflexion of body and neck.* In cases of extreme anteflexion of body and neck a difficulty is sometimes experienced in getting round the rather abrupt curve at the juncture of the two. This may be overcome in the following way: As far as the internal os the probe should be passed with the concavity of the curve backward, as if for a case of retroflexion (Fig. 99); it should then be reversed and carried into

the body in the usual way. The accompanying diagram (Fig. 100) will illustrate this manœuvre.

*Treatment.* It is impossible by means of treatment to completely correct the flexion. The uterus can-

FIG. 99.

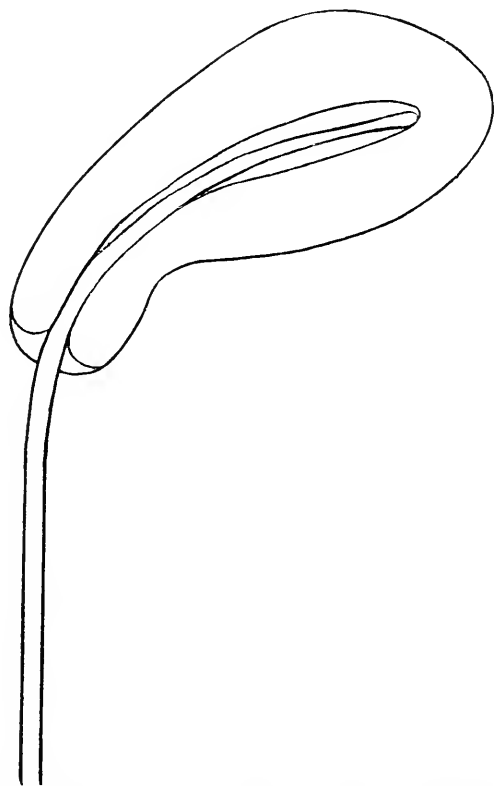


Method of Passing Probe in Anteversion of Body and Neck, No. 1.

not be made normal. What we can attempt to do is to relieve symptoms. It is well when a case is seen for the first time, if no treatment has been tried, to make the attempt to modify the pain by simple hygienic measures and by drugs. The patient should be

cautioned to avoid unusual excitement and nervous strain for the two or three days which precede the menstrual flow. Rest in bed for the first two or three days of menstruation should be enjoined. Sometimes this with warmth will in the course of a few months relieve the pain to a marked degree. In addition,

FIG. 100.



Method of Passing Probe in Ante flexion of Body and Neck, No. 2.

something may be gained by the judicious use of drugs. Some of these are best given for the week before the catamenia, others at the time of menstruation. One of the most efficacious of the first class is helonin ;

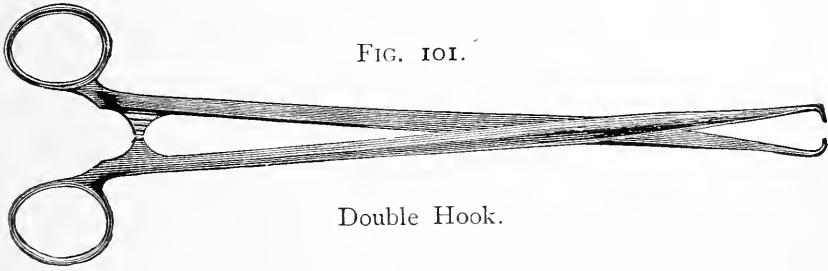
another is apioline in the form of capsules three times a day. Salicylate of soda will sometimes modify the pain if given beforehand. Of those drugs which have a reputation for relieving pain at the time, viburnum is one of the best known. Sometimes alcohol, especially in the form of gin, is effective and some of the coal-tar preparations of which phenacetine is the type will occasionally prove efficacious. We may try suppositories of a quarter grain each of cannabis indica and belladonna, given night and morning, if there is much nervous excitement beforehand. If a special drug fails to give relief, another should be tried the succeeding month, and if, after a few months of this milder treatment, relief does not follow we should resort to dilatation as promising more. It may be well to try the effect of the primary moderate stretching before advising a more complete dilatation, which is in the nature of an operation. The patient should be seen a day or two before the menstruation is expected and under the application of cocaine, graduated dilators should be used, but only to a point which the patient can endure. This is usually a painful procedure. At best only a few numbers of the dilators can be used without ether.

If this is followed by relief in the following sickness it is an additional reason for doing the more thorough operation.

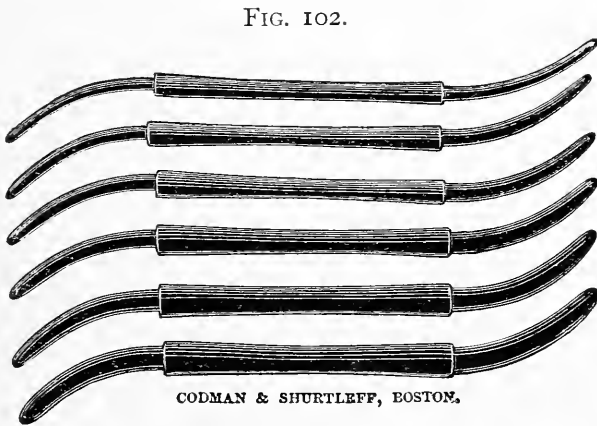
The object to be attained by the operation is two-fold—to dilate the canal, and to prevent its contracting immediately, as it shows a tendency to do. This can be secured in the highest degree by thorough dilatation



under ether, and the use of a plug to maintain the dilatation for a certain length of time. The method which has given the best results in my hands is as follows : The patient is carefully prepared as for an operation



and the strictest asepsis is carried out. Having thoroughly cleansed the vagina, the anterior lip is seized with a tenaculum or double hook (Fig. 101), prefer-

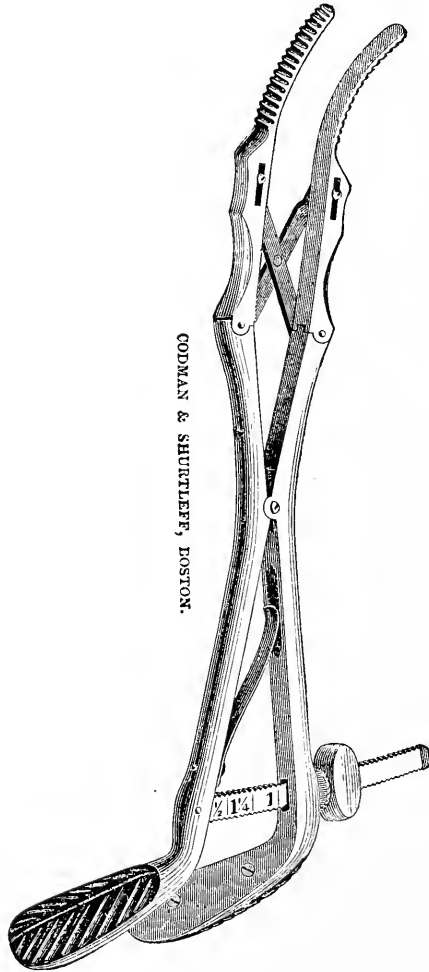


Hank's Dilators.

ably the latter, as a firm hold is necessary. The canal is then dilated gradually with a set of steel or hard-rubber instruments (Fig. 102) and the stretching completed by means of a branched dilator, of which Goodell's modification of Ellinger is a type (Fig. 103). In

using the latter instrument care should be taken not to force the blades apart by means of the screw, but the

FIG. 103.



Goodell's Modification of Ellinger's Dilator.

hand alone should be used, so that the amount of force can be justly estimated. Having thoroughly dilated the canal, the next step is to curette. This

should be done with a sharp instrument (Fig. 104) and thoroughly, even though there may not be any evidence of endocervicitis present. The uterus should

FIG. 104.

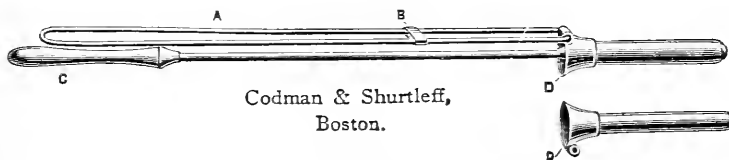


CODMAN & SHURTLEFF, BOSTON.

Sharp Curette.

then be washed with sterile water through the uterine speculum (Fig. 105).

FIG. 105.

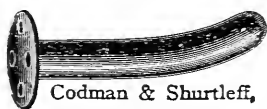


Codman & Shurtleff,  
Boston.

Burrage's Uterine Speculum.

The plug which I use is of hard rubber, slightly bent to adapt itself to the normal curve of the uterus, and of varying sizes to suit different cases. The

FIG. 106.



Codman & Shurtleff,  
Boston.

Hard Rubber Plug.

stem is solid and ends in the flange through which four holes, an anterior, a posterior and two lateral are bored (Fig. 106). Having selected a stem of a suitable size, it is pushed in through the canal and fastened in this position by means of four silver-wire sutures passing through the anterior and posterior lips and laterally, and through the holes in

the flange. The sutures are then twisted, bent over the face of the flange and cut off. No dressing is needed in the vagina. There is usually some pain after this operation similar to dysmenorrhœa, which is due to the efforts of the uterus to rid itself of the stem, but this subsides after a few hours and, as a rule, the stem gives no further trouble. The drainage of the secretions and of the menstrual blood during catamenia goes on by the side of the stem and, as a rule, causes no difficulty. A solid stem is preferable because a hollow tube will not drain, the secretions coagulating in the tube and being liable to cause trouble. The after-care is simple. The patient is kept in bed for a week, then is allowed to get up, care being taken that she does not overdo. She is instructed to wear the stem for from four to six weeks. Should any symptoms arise which suggest beginning trouble she should seek advice. As a rule, the stem gives no annoyance, except a possibly increased tendency to slight flowing before the menstruation and a little more profuse menstruation while it is in. At the end of from four to six weeks, usually after one menstrual period has been passed with the stem in situ, it is removed by cutting the silver wire sutures. While this operation does not invariably cure, yet in the majority of cases it either gives complete relief or the patient is rendered so comfortable that no other treatment is necessary. Occasionally no benefit results, and in these cases it seems probable that the dysmenorrhœa is not of this type, but of the ovarian or nervous form.

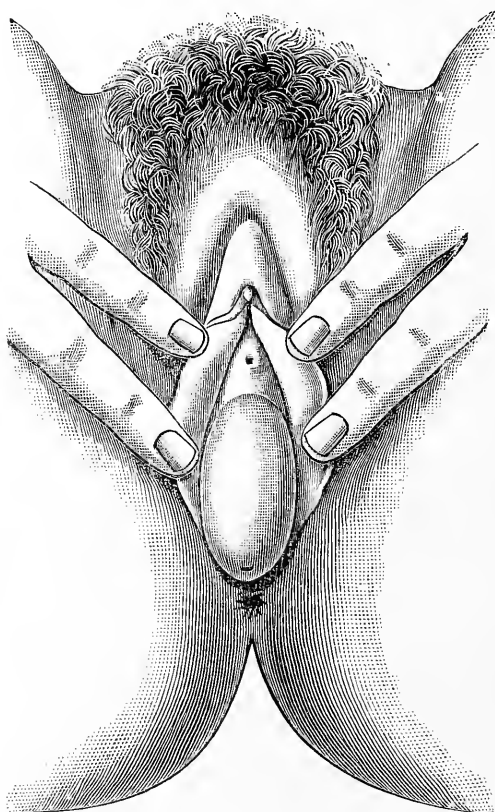
## CHAPTER IX.

### INVERSION OF THE UTERUS. HYPERTROPHY OF THE CERVIX UTERI.

INVERSION of the uterus, as the name implies, is a turning of the uterus inside out. The fundus, either partially or wholly, comes down through the cervical canal. It may be partial, a mere falling in of a portion of the uterine wall, or complete. Where the fundus comes down and lies in the vagina it usually occurs after labor and is either spontaneous, or the result of traction upon the cord. The symptoms of the acute form are shock and hemorrhage. In the majority of cases it is easily recognized at the time of occurrence, and its reposition in the relaxed condition of the tissues is an easy matter. A tampon may be necessary to prevent its recurrence. If it is not recognized and becomes chronic we have a condition where a sensitive tumor is found in the vagina which bleeds easily and causes irritation of the vaginal walls by friction, and also causes pressure upon the bladder and rectum. It is seen to bleed at the time of menstruation. The diagnosis is comparatively easy. The only thing with which it can be confounded is a fibroid polypus in the vagina. The diagnosis of the latter condition may be made by passing the probe past the tumor into the canal of the uterus and determining that the tumor is attached to one side of the cervical canal. In the

case of an inverted uterus a solid ring of tissue surrounds the tumor in the upper part of the vagina. The treatment of the chronic form is a matter of great trouble. It resolves itself into attempts at reposition

FIG. 107.



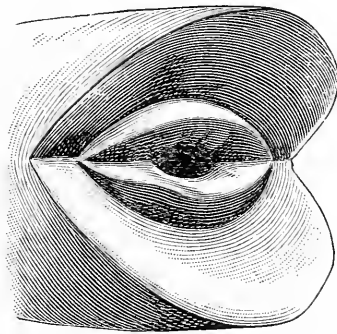
Hypertrophy of Cervix Uteri.

by taxis under ether. Sometimes these are successful, but often they are not. Where simple pressure by means of the hand is not successful, various methods of continuous pressure by cups and elastic bands have

been tried. No one method will apply to every case, and the surgeon must use his skill and ingenuity to solve the problem in the best way. Severe operative measures may be necessary, such as opening the abdomen and stretching the canal from above, or the removal of the uterus by the vagina.

*Hypertrophy of the cervix uteri.* We occasionally meet, especially in unmarried women, a condition known as hypertrophy of the cervix where, without prolapse, the neck of the uterus becomes elongated, sometimes to such an extent as to project two or three inches outside the vulva (Fig. 107). It is possible that prolonged and severe expulsive efforts may have something to do with it. The symptoms are those of a foreign body causing irritation by its presence. In

FIG. 108.



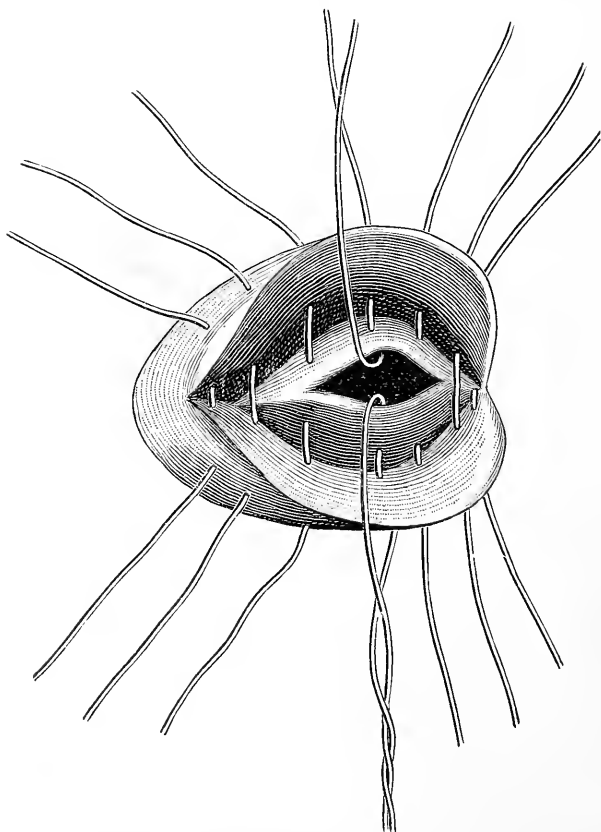
Cervix after Amputation of Both Lips.

making a diagnosis we estimate the increased length of the uterine canal by means of the sound. Bimanually we can make out the body of the uterus in its normal position. We can, therefore, rule out prolapse.

The finger in the vagina will recognize that the vagina is of the normal depth and that the increased length is due to the growth of the cervix alone.

The only treatment for this state of affairs is amputation of the cervix. With the patient on the back the cervix is exposed and is split up laterally to within an inch or an inch and a-half of the vaginal junction. Each lip is then removed by a semicircular incision with the convexity downward, running about two-

FIG. 109.



Cervix after Introduction of Sutures.



thirds through the thickness of the cervix to be met by an incision from the cervical side through the remaining third. This gives, after removal, a condition of affairs as represented in Fig. 108.

The sutures are placed in the following way: The vaginal surfaces of the anterior and posterior lips as far as the cervical canal are united at either angle by interrupted sutures going through the whole thickness of the cervix. In order to preserve a patulous canal, the mucous membrane of the cervix is united to the vaginal surface both anteriorly and posteriorly by interrupted sutures, as is shown in Fig. 109.

FIG. 110.



Sectional View of Amputation of Cervix.

These sutures may be of chromicized catgut. The patient should be kept in bed a week and the ordinary after-care for operative cases is all that is necessary.

## CHAPTER X.

### INFLAMMATORY CONDITIONS OF THE UTERUS.

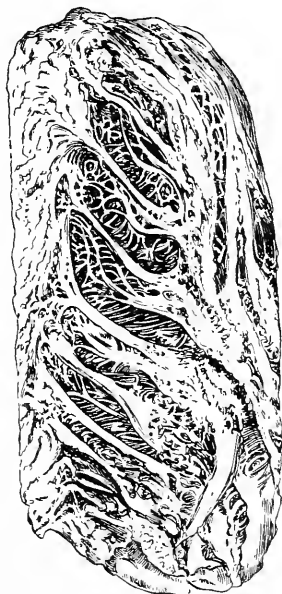
UNDER this head it is proposed to treat of those common affections: metritis, endometritis and endocervicitis. The acute inflammations of the lining membrane of the uterus and of the muscular structure of the organ are comparatively rare; the chronic conditions above referred to, however, form a very respectable contingent of the diseases to which the uterus is subject, and their successful treatment should be thoroughly understood by every general practitioner.

A brief review of the anatomy of the mucous membrane lining the uterine canal is appropriate here, inasmuch as the character of the inflammatory affection of the uterus will depend upon the structure of the membrane. The body of the uterus is lined with a smooth membrane which is covered with columnar epithelium and studded throughout with simple glands; these, the so-called utricular glands, extend through the mucous membrane and dip down to some extent into the muscular substance of the organ. They are usually single tubes, rarely branched.

The cervix differs somewhat from the body in the arrangement of the glands. It is divided anteriorly and posteriorly and laterally by four ridges which extend from the os externum to the os internum and

are known as the columnæ. Between these, running in a diagonal direction, are other ridges. This arrangement constitutes what is known as the arbor vitæ (Fig. III). Between the ridges are depres-

FIG. III.



Cervical Mucous Membrane.

sions of considerable depth. The whole surface is more or less thickly provided with glands, which are of the racemose variety. They open on the elevations as well as the depressions of the membrane, and it is this fact which makes the treatment of inflammation of this part of the uterus so stubborn and difficult, inasmuch as the irregularities in the membrane favor disease lurking in out-of-the-way spots.

*Acute metritis.* This affection, though, as has been said, a rare one, deserves a brief consideration here. In its acute form it is probably always of septic origin,

that is, it is caused by the entrance of pathogenic germs. It is most often of puerperal origin, but may follow operations on the uterus, or instrumentation. In its strict sense it involves the whole uterus, lining membrane, muscular structure and peritoneal covering. The symptoms are pain in the lower abdomen, with tenderness on pressure, fever and a purulent discharge from the uterus. Vaginal examination shows little but a swollen cervix and a tender and enlarged uterus. Treatment consists in rest in bed, hot fomentations to the abdomen, and, if the patient can bear them, hot vaginal douches. After the acute stage is passed, the uterine cavity can be washed out and applications of iodine made to the canal.

*Chronic metritis.* Chronic metritis, or, as it is generally called in this country, after Thomas, areolar hyperplasia, affects the muscular structure of the uterus. Its course may be divided into several stages. The first stage may be called that of engorgement. Here the uterus is full of blood, heavy, less firm and elastic than usual, and considerably enlarged. When this state of things has lasted for some time there begins a proliferation of connective-tissue cells, the uterus grows firmer, it is less engorged with blood, and the organ grows smaller. As this new connective tissue is formed, however, it contracts at the expense of the normal muscular tissue, the blood vessels become compressed, and in time the organ becomes small, dense and fibrous. This constitutes the last stage of the process.

*Causes.* As will be seen from this brief sketch, any

cause which for a long time interferes with the normal circulation of blood in the uterus may lead to this chronic inflammatory condition. It is most commonly met with in women who have borne children, especially in those who have had numerous pregnancies in quick succession. As a rule, with proper care the uterus in the few weeks succeeding parturition returns to its normal size and condition. This is expressly favored by lactation, and the process is called involution. If, however, it is interfered with, either from the patient too soon returning to her ordinary duties, or from the development of a displacement, or the occurrence of some inflammatory process in the neighborhood of the uterus, we find the organ remaining enlarged and engorged with blood, and the first stage of chronic metritis is present. This is conveniently called subinvolution. The same condition, though as a rule in a much less degree, may be found in single women, or in married women, the result, not of pregnancy, but of aggravated displacements, or chronic engorgement from faulty modes of living. As a rule, these conditions result in inflammations confined to the lining membrane of the canal and body; but, occasionally, the muscular structure of the uterus may be affected. When this is the case, however, the uterus very rarely attains the size that it does when due to puerperal causes. We find it in this modified degree in women who are obliged to be on their feet a great deal, or who run the sewing machine for hours together, or who follow any occupation which tends to keep the pelvic organs engorged.

*Physical signs.* The physical signs on examination are a large, heavy body, usually somewhat sensitive, varying in consistency according to the stage and the length of time the favoring conditions have been operative. The canal is often not much increased in length as measured by the probe, for the increased size is usually principally due to a thickening of the muscular wall. There is some increase, however, oftentimes not more than half an inch to an inch. The increase in size is symmetrical, thus distinguishing it from a fibroid developing in the uterine wall.

*Symptoms.* In the earlier stages menstruation is apt to be increased, and there is usually dysmenorrhœa. As the cirrhotic change, if it may be so called, gradually develops, the flow tends to become scanty and the pain usually increases. There are present pain in the back and a feeling of weight in the pelvis, due to the increased blood supply, especially at the time of menstruation. At times there is frequent and painful micturition.

*Treatment.* The treatment will naturally vary with the physical conditions which we find present.

*Local.* If seen in the beginning, where subinvolution is the prominent factor, as in the cases of puerperal origin, the indications are to relieve the congestion and to increase the muscular tonicity of the uterus. The first object may be aided materially by the use of the glycerine tampon. Twice a week applications of Churchill's tincture of iodine should be made to the vault of the vagina, and a glycerine dressing applied, to be worn from twenty-four to thirty-six hours, and

then removed. Applications made to the interior of the uterus by means of the applicator, as will be described later, will often prove efficacious in obstinate cases in reducing the size of the uterus. These should be preferably the milder ones, such as the tincture of iodine or the glycerite of tannin.

The pain which is usually present, and which is due to the dragging of a heavy uterus, may be relieved, and the circulation, as a whole, improved, by the adjustment of a support. If there is much lividity of the cervix, and especially if there is an erosion about the os, occasional puncturing with the bistoury and the removal of perhaps a teaspoonful of blood, will be of benefit.

We very often find a large subinvolted uterus associated with a laceration of the cervix, and attempts at reducing the size of the womb will be very apt to be futile as long as the cervix is left unoperated upon. The operation should be urged as soon as the patient's health will admit of it, and will often prove of more benefit than months of treatment by applications and puncturing.

*General.* A great deal can be accomplished by regulating the patient's mode of life. • The involution of the uterus is a physiological process which is, in a great measure, dependent upon the general state of health for its successful completion. The better state of general health a woman can keep herself in, the more likely is the womb to return to its normal size and condition. It is unnecessary here to go into the details of the physiological and hygienic principles which

should be acted upon to attain this end, but a few points may be briefly touched upon. Nourish the patient well, see that she eats healthful and sufficient food, and regulate the bowels. Too much exercise of one kind should be avoided. It is a mistake to suppose that long walks are advantageous. Short periods of exercise, followed by lying down, so as to insure thorough rest, are to be enjoined, and much standing about the house, or going up and down stairs, are to be forbidden. All kinds of work which necessitate long periods of standing or sitting, and especially work which involves the use of a treadle, as a sewing machine, are very prejudicial. The clothing should be comfortable about the waist, and the arms and legs protected by woolen garments. If the physician remembers that the essential feature in these cases is pelvic congestion his common sense will suggest to him what to advise his patient to do to lessen it as much as possible.

The earlier such cases come under treatment the better. In just so far as the tissue changes described above have progressed will the ultimate return of the uterus to its normal size be doubtful and the treatment be palliative rather than curative. If the patient first comes under observation after such changes have occurred, as is evidenced by the firmer consistency of the womb and by the decrease of the amount of the catamenial flow, our treatment will be largely symptomatic. A pessary to raise the organ will often afford great relief to the dragging and pain which are so often complained of. The dysmenorrhœa and



scanty flow are two other symptoms which frequently lead the patient to seek the advice of the physician. What was said under the head of congestive dysmenorrhœa and scanty menstruation as regards treatment will apply here. Hot-water douches during the intermenstrual period, with occasional applications of iodine or something similar, are indicated, and at the time of the menstrual flow the application of a tampon or free scarification—preferably the former. For the arrest of the tissue changes I should rely on electricity, in the form of galvanism, applied after the method of Apostoli, with one electrode in the uterine cavity, the other on the abdomen. I have also found faradization of considerable benefit in these cases.

We come now to the consideration of endometritis, or an inflammatory affection of the lining membrane of the uterus.

*Acute endometritis.* Acute endometritis is comparatively rare, at least it is seldom recognized in this stage, except when it is of gonorrhœal origin. It then forms a part of the general affection of the genital tract, which, starting in the vagina, may extend through the uterus and Fallopian tube even to the pelvic peritoneum. That part of the process which attacks the lining membrane of the uterus is characterized by a sudden increase of the normal secretions of the glands, by an acute swelling of the mucous membrane, pain, not only confined to the canal, but affecting the whole organ, and a more or less general febrile condition.

The treatment should consist of rest in bed, relief of

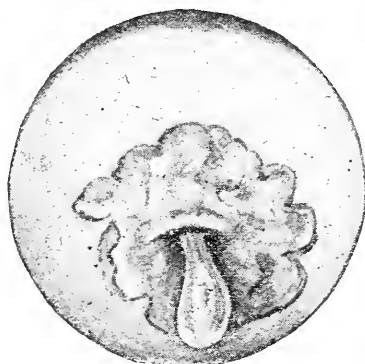
pain by hot applications to the abdomen, anodynes, and hot vaginal douches, one or two a day, as they prove to be soothing.

*Chronic endometritis.* Chronic endometritis is one of the most common diseases that we meet with. It may follow the acute form, or it may come on insidiously and gradually, and only be recognized when the symptoms are fully established. This is the more common. It may affect the whole membrane both of cervix and body, or may be confined to one part alone. If it attacks the cervical membrane only, it is known as endocervicitis, or cervical endometritis as opposed to corporeal endometritis. It is comparatively common for the cervix to be alone affected, while it is the rule that with an inflammation of the lining membrane of the body the cervix also is implicated. Therefore, as the symptoms of the two varieties differ to some extent and the physical signs are not alike, and particularly as the treatment differs, it is well to consider the two forms separately.

*Cervical endometritis.* This affection may, in the majority of cases, be called a catarrh of the neck of the womb. The pathological changes which are found are those characteristic of a chronic irritation of a mucous membrane. We have in the first place a congestion which is followed by a hypersecretion of the glands giving rise to the characteristic discharge. With the throwing off of the cells from the increased glandular activity, we get the opaque or yellowish color of the discharge which is found in this disease (Fig. 112). Later there is an increase in the amount of gland tissue. The

whole mucous membrane lining the cervix becomes thickened, and this may be so marked that it will be forced out through the os and show on the external

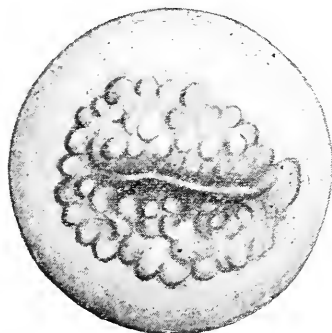
FIG. 112.



Erosion of Cervix and Characteristic Discharge (Heitzmann).

surface of the cervix. In other words, there is an ectropion, so called, of the cervical mucous membrane (Fig. 113). Another pathological change which we find in

FIG. 113.

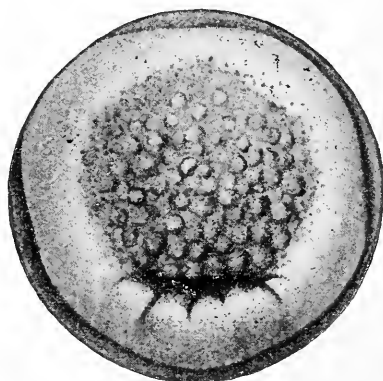


Ectropion of Cervical Mucous Membrane (Heitzmann).

connection with endocervicitis is an erosion. By an erosion is meant a circular patch surrounding the os where the mucous membrane, as a result of the extension of the

inflammation downwards, or the effect of the irritating discharges of the uterus, has become denuded of its pavement epithelium and as a consequence we have a raw surface. The pavement epithelium is replaced by newly formed cells which are columnar in shape. There is an actual new formation of gland tissue and the papillæ between the glands project above the surface in the form of little red points (Fig. 114). If the mouths

FIG. 114.



Erosion of Vaginal Portion (Heitzmann).

of the glands which have developed upon the vaginal surface become occluded, as they may, and the secretions are retained, we have what is known as cystic degeneration, the little retention cysts being known as the ovula Nabothi (Fig. 115).

*Causes.* Certain women are constitutionally predisposed to catarrhal inflammations, and as regards the affection of the lining of the uterus are no exception to the rule. Only in this way can we account for numerous cases which we find in young unmarried

women and girls. If in addition to this general predisposition we add errors of hygiene to which young women are prone we have other favoring causes. Anything which tends to favor a chronic congestion

FIG. 115.



Erosion with Ovula Nabothi (Heitzmann).

of the uterus is conducive to the production of this disease. This is especially true of imprudence before or during menstruation. A certain amount of physiological rest is essential in most cases to a proper performance of this function, and this is particularly true where there is naturally either profuse or painful menstruation. If at this time the patient is imprudent in the way of exercise, of exposure, or of unusual mental strain, there is apt to be an interference with the normal character of the catamenia, and the result may be congestion. If this is kept up month after month endocervicitis is likely to result. Childbirth with its accompanying accidents is a very fruitful cause of cervical endometritis. This is especially true of lacerations of the cervix or of the perineum. Getting

up too early after childbirth and resuming a laborious occupation also favors this disease.

*Symptoms.* The first symptom to attract the patient's attention is usually leucorrhœa.

*Leucorrhœa.* It must be borne in mind, in estimating the value of leucorrhœa as a symptom, that women differ very greatly as to their ideas of what constitutes an abnormal discharge. With many women the slightest moisture is a source of annoyance and will lead them to consult a physician. Usually, however, a considerable leucorrhœal discharge will be tolerated without complaint. The women with whom it is profuse enough to necessitate their wearing a napkin are very few. Two popular beliefs, in a measure, influence the habits of women in this respect. In the first place, leucorrhœa is looked upon as a loss of some highly important fluid of the body and as very weakening. Instead of recognizing that the discharge is very often a result of the weakened and debilitated state of the general health, it is regarded as the cause. But there is also a popular impression that wearing a napkin, by heating the parts, favors an increase of the discharge; hence cleanliness is sacrificed.

*Amount of leucorrhœa.* A woman's statement, therefore, as to the amount of the leucorrhœa must not be relied upon, but the physician must satisfy himself by a physical examination as to its character and amount. The cervix is exposed with the speculum, and the character of the discharge, which is either found in the upper part of the vagina or exud-

ing from the os, usually both, is carefully noted. Normally there is almost no *free* secretion in the vagina. The walls are moist, but there is no extra amount of mucus which can be isolated and examined by itself. The cervical canal often contains a small amount of perfectly clear mucus, like the white of an egg, which projects from the os. There may even be no appreciable amount of this. The variations from the normal may be two, either simply an excess of mucus of the ordinary character, or mucus altered in the way to be described, and usually increased in amount.

The first change is the rarer, and, as a rule, is found as a result of debility, and is not of inflammatory origin. We find the cervix filled with a large amount of clear mucus, and there is usually a considerable quantity present in the vagina.

A common symptom of this form of leucorrhœa is that at intervals during the day, especially on any slight exertion, there will be a gush of mucus from the vagina, followed by a period of complete freedom from it. Two factors favor the occurrence of this phenomenon: first, the viscid character of the discharge, which prevents its flowing easily, and, second, the tight closing of the vaginal orifice. The latter is more likely to occur in unmarried women, and it is principally among them that we find this form of leucorrhœa.

*Character of leucorrhœa.* In other cases the discharge is altered in character as well as in amount. It becomes opaque, turbid, and more viscid, later turning to yellow, and becoming very thick and tena-

cious. The depth of color and the degree of viscosity are very good guides to the severity of the case, and the ease with which it will yield to treatment. Such is the discharge which is characteristic of the endocervical inflammation. That which comes from the body of the uterus is thinner and less tenacious. It is rare, however, to find that present alone, except as a result of fungoid degeneration of the mucous membrane of the body, which we will come to speak of later. In fact, the evidence which we can get by our physical examination of the presence of a catarrhal condition of the lining membrane of the body is very slight. It is claimed that hyperæmia of the mucous membrane is shown by the fact that a drop of blood follows the careful introduction of the probe, and this is probably the case. Still, the first introduction of the probe is more or less a blind piece of work, and before the correct curve is obtained, the delicate membrane is liable to be wounded. Hence blood following the *first* passage of the instrument should not be accorded too much diagnostic value. If, after the direction of the canal is known, and every time the probe is carefully passed blood follows, it may be assumed that the membrane is hyperæmic, and endometritis in its earlier stages may be inferred. When it has gone on to such degenerative changes as we find in advanced cases, the character of the discharge points conclusively to such a condition. The presence of an abnormal discharge, therefore, points to diseased mucous membrane, very probably of the cervix, possibly of the body of the uterus.



Pain is not usually a very important factor in this disease, though it may occasionally be present to some extent. When present it is apt to be in the back. There are now and then some more general affections on the nervous system.

*Diagnosis.* The diagnosis of cervical endometritis is usually an easy matter. The touch will rarely reveal anything definite except the presence of cystic degeneration and perhaps a generally swollen condition of the cervix. On examining with a speculum, however, we get clear evidence of the presence of this disease. The most constant condition that we find is that of a plug of mucus filling the cervical canal, and hanging from the os. This is usually very tenacious, cloudy or yellow in color, and extremely difficult to dislodge. If there is an erosion, and especially if there is cystic degeneration, this condition can readily be seen and at once establishes the diagnosis.

*Treatment.* Treatment, as usual, resolves itself into general and local. General treatment comprises whatever will build up the health of the patient, and will be particularly efficacious in those cases first spoken of, where the discharge seems to be due to general causes. Women broken down from any cause will often suffer from a leucorrhœal flow, which only needs rest and general tonic and hygienic treatment for its complete cure. So-called scrofulous women are also liable to this form of endocervicitis.

As a stepping-stone from general to purely local treatment, douches may be mentioned. These may, from their antiphlogistic properties, be of benefit in the

less inveterate cases, but it is doubtful if in the ordinarily chronic cases they are able to modify to any great extent the character of the mucous membrane of the cervix, or affect the amount of the discharge. By washing away the mucus which has collected in the vagina, they make the patient more comfortable, and they neutralize and prevent the irritation which the cervical leucorrhœa not infrequently causes to vagina and vulva.

*Applications to endometrium.* Our main dependence in the treatment of these affections must be upon topical applications to the diseased mucous membrane. These are best made in the following manner: The cervix having been exposed with Sims's speculum, the first step is to remove the mucus from the uterine canal. This is obviously necessary, as otherwise the application would spend itself upon the mucous plug and not touch the diseased membrane. Usually the discharge is too tenacious to be dislodged with the cotton-stick. The best way to remove it is to suck it out with the uterine syringe. A very practical and effective modification of the ordinary syringe has been made by Dr. William H. Baker (Fig. 116). The long, straight nozzle of the hard-rubber uterine syringe is cut off perhaps an inch from the barrel. Over this is slipped a bit of India-rubber tubing two inches in length, and into the other end of the tubing is inserted a piece of small glass tube four inches long. The India-rubber tubing is firmly tied at both ends. This gives us a long-nozzled instrument with what is practically a movable joint—an advantage which will be thoroughly appreciated

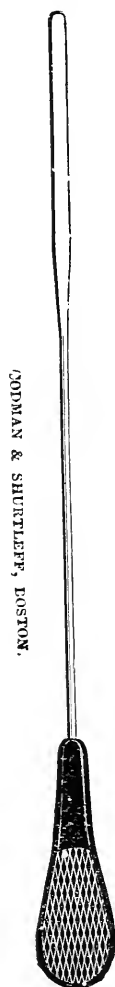
by anyone who has tried to introduce the long, stiff nozzle into a cervix which is not pointing in the axis of

FIG. 116.



Uterine Syringe.

FIG. 117.

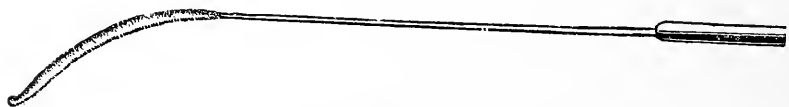


Applicator.

the vagina. The glass tip enables us to see when any mucus has been withdrawn. It is important that the glass tubing should have a perfectly smooth end, so as not to wound the membrane.

The syringe is used in the following way: The piston should be fairly tight, so that there may be good suction power; a little water is then drawn into the syringe, the point inserted into the os uteri, and the piston quickly drawn back. The mucus is then

FIG. 118.



Applicator Wound for Use.

driven out of the tube by the water in the syringe. This discharge is often so tenacious that, if a little water were not previously drawn in, it would be difficult to dislodge. Two or three attempts may be necessary before the plug can be drawn out, and occasionally the suction force of the syringe is not sufficient to accomplish it at all. In such cases a bit of dry sponge on a sponge-holder, passed just within the os and twisted, will usually so entangle the mucus that it will yield.

The canal having been thoroughly cleansed from the secretion, the necessary application is made by means of the applicator. This is a long, slender, flexible instrument, like a flattened probe (Fig. 117).

A small bit of absorbent cotton is drawn out into a thin film, about two inches and a-half long by an inch wide, which is wound smoothly and tightly on the applicator, care being taken to make it secure at the lower end by moistening it and giving it an extra twist (Fig. 118). The applicator is then curved to

correspond exactly with the direction of the canal as found by the probe. It is then dipped into whatever application it is desired to use, and is passed into the canal as far as the internal os, if we wish to limit the treatment to the cervix ; as far as the fundus if the whole canal is to be treated. It is allowed to stay in position a short time, so that the muscular contraction which is excited by the presence of the applicator may favor the thorough action of the medicinal agent on the mucous membrane, and then withdrawn. Any excess of the substance applied, especially if of a caustic nature, should be caught by absorbent cotton, and not allowed to run over the vaginal walls. A cotton dressing with glycerine should then be placed against the cervix, and allowed to remain from twelve to twenty-four hours.

*Various applications.* The nature of the application depends upon the length of time that the inflammatory condition has lasted, and the degree to which the glandular structure of the cervix is implicated. The milder the affection the milder the application. Two considerations should, however, lead us to begin in all cases with the simpler forms of treatment : first, the fact that it is impossible to say beforehand how the uterus will bear any internal medication ; and, second, the impossibility in many cases of judging from the physical signs whether the case is one which will yield readily or not. It is, therefore, wise to start out with mild applications. The two which will prove efficacious in a large number of simple cases are Churchill's tincture of iodine, the formula of which is

R. Iodine,	gr. 75.
Potass. iodid,	gr. 90.
Alcohol,	℥j. M.

and the glycerite of tannin (tannin one part, glycerine four). With a small os and a narrow canal the iodine will be found easier of application than the tannin, as the latter causes so much puckering of the tissues from its marked astringent qualities that it is difficult to introduce the applicator. Where the os is patulous this objection does not hold.

When these simple applications fail to effect improvement, iodized phenol—a mixture of equal parts of tincture of iodine and crude carbolic acid—may be tried. This is a very valuable application. It has a moderately caustic effect, and the excess should be prevented from running over the vaginal walls. Shreddy bits of membrane will be found in the douche after a few days, which represent the superficial slough. A still stronger application is the impure carbolic acid alone. This has a more energetic action on the surface to which it is applied. It is, however, comparatively painless, and may be applied at the physician's office.

If the given case has resisted all these various forms of treatment, it may be considered obstinate, and still stronger measures employed. The first of these is the application of pure nitric acid. Certain precautions should be observed with this which are not necessary with the other methods. This application had better be made at the patient's house, and she should keep her bed for at least twenty-four hours. The canal

should be somewhat dilated, unless it is very patulous. This can be done at the time of the application with graduated dilators or a small Ellinger. The excess of nitric acid should be neutralized by placing bicarbonate of soda in the left cul-de-sac, which is the lower as the patient lies in the Sims's position, or by placing cotton saturated with a solution of the same about the os. Having taken these precautions, the method of procedure is the same as for the milder forms. Such an application as this should not be made oftener than once in two weeks. The iodine and tannic acid may be applied every third or fourth day, the iodized phenol or carbolic acid once in five or six. The cases which call for such vigorous treatment are those where there is considerable hypertrophy of the gland tissue, and the ordinary applications do not reach much below the superficial layers of the mucous membrane. Such cases usually show ectropion of the cervix, and are characterized by a large amount of a very tough, viscid mucus. Sometimes nitric acid fails to reach the whole of the diseased area, and we are driven to still more radical measures. The first of these is thorough curetting of the cervix with the sharp curette followed up by an application of nitric acid. This removes the superficial layers of the mucous membrane, which is then more efficiently acted upon by the acid. This necessitates ether for its proper performance.

The last resort in the ultra-obstinate case is an operation by which the mucous membrane of the cervix is, to a considerable extent, dissected off or reamed out.

*Corporeal endometritis.* Corporeal endometritis may

be present without any implication of the cervical mucous membrane, although usually both exist together. The process differs somewhat from that of cervical endometritis. The essential feature of the disease when it attacks the lining membrane of the body of the uterus, is a hyperplasia of the glandular structure. The glands show an increased activity, they become elongated, there is a new growth of cellular tissue between them, and, as a consequence, there is an oversecretion of the glands and a swelling of the mucous membrane. As long as this hypertrophy extends towards the canal of the uterus we have merely a benign process affecting the endometrium alone. If, however, the glands tend to grow down into the muscular substances of the uterus, we have a tendency to what is known as malignant adenoma.

The causes of corporeal endometritis are in general the same as those of the cervical form. The symptoms vary somewhat. In the first place menstruation is apt to be affected. As a rule, it is prolonged and more profuse. The leucorrhœa which is characteristic of this disease differs from that which we find in cervical endometritis in being thinner and often tinged with blood. In fact, this disease is one of the most common causes of metrorrhagia. There may be a slight, constant, bloody discharge lasting through the entire month, and this is the more common condition found, or there may be little hemorrhages appearing from time to time with free intervals between. Pain is more often complained of than in the cervical form. It is caused by the heavy uterus, which also gives rise



to dragging and pressure. On making an examination we find the uterus larger than normal, softer to the touch, and more painful on pressure. The speculum will show a congested cervix with the appearance of a discharge from the os. On the passage of the probe we find a sensitive membrane which bleeds easily. The uterine cavity is usually slightly enlarged.

*Treatment of endometritis.* The treatment in the ordinary case of endometritis is similar to that recommended for endocervicitis, with slight modifications. The applications are the same, but if the medicinal agent is to reach the mucous membrane above the internal os, we must provide against its being used up as it passes through the cervical canal, and none being left for the diseased tissues beyond. This is secured by previously dilating the canal either with graduated sounds, or with the dilator before referred to. Exceptionally it may be of advantage to pass a small tube into the canal as far as the os internum, and make the application through this. This precaution should always be observed when the stronger applications are used, as it is of the utmost importance that the excess should have free exit. It is the failure to secure this free drainage which has brought into disrepute the method of intra-uterine medication by means of injecting a few drops of some remedial agent into the uterine cavity with a syringe. In addition to care in the method, when nitric acid is to be applied, the patient should be seen at her home, and be kept quiet in bed for a day or two.

*Hyperplastic endometritis.* When the disease has

lasted a long time it will rarely yield to such simple measures. The membrane becomes altered in character, so that we have what is known as endometritis hyperplastica, or fungosa, or fungoid degeneration of the mucous membrane. It is characterized by the presence on the lining membrane of the uterus of small growths, of soft consistency, varying in size from a millet seed to a pea, and which consist of much hypertrophied mucous membrane, enlarged follicles and dilated blood vessels. Any cause which tends to keep the organ filled with blood favors their production.

The special symptom which points to this affection is hemorrhage, either at the time of menstruation or between the periods, and in the intervals between the attacks of flooding, a profuse, thin discharge tinged with blood. This latter points more clearly to the presence of fungoid degeneration than the former, which is common to many other affections.

The only treatment which promises success is removing these growths by means of the curette. Applications to the interior of the uterus may for a time arrest the symptoms, but, unless preceded by curetting, will seldom effect a cure.

The dull-wire curette (Fig. 119) may sometimes be employed without ether, provided the cervix is sufficiently dilated, and it is very apt to be softened from the prolonged discharge. It is rather painful, but oftentimes not so much so that ether is necessary. Following the curette there should be a thorough application of tincture of iodine to the whole interior of the uterus.

Where the symptoms have lasted a long time, and there is a profuse sanguineous discharge from the uterus, especially if milder treatment has been tried

FIG. 119.



CODMAN &amp; SHURTLEFF, BOSTON.

Dull-wire Curette.

without lasting effect, Sims's sharp curette should be used. This necessitates ether, and the scraping should be thorough. The growths which are the most difficult to remove are those situated at the fundus, especially near the openings of the tubes. Sometimes dilatation with tents or dilators must precede the curetting.

*Curetting.* Curetting the uterus, while not a serious procedure, should yet be considered an operation, and all ordinary precautions in regard to cleanliness should be observed. In order to be thoroughly done an anæsthetic is necessary. The patient should be told that rest in bed is essential for from five to seven days. The bowels should be moved by a cathartic and an enema on the morning of the operation, and an antiseptic douche should be given. The vulva and the vagina should be thoroughly cleansed with soap and water. With the patient on the back, the anterior lip of the cervix is seized with a double hook, and the uterine canal is gradually stretched with a series of either steel or hard-rubber dilators. After a moderate stretching in this way, a branched steel dilator, of

which Goodell's modification of Ellinger is a type, should be inserted through the internal os and the canal forcibly stretched. This should be done with the hand and not by means of the screw attached to the handle of the instrument. In this way the amount of force used can be estimated. Having secured thorough dilatation the whole surface of the lining membrane of the uterus is thoroughly scraped with a sharp curette, beginning at one point and going completely around the canal. This should be done until the instrument scrapes upon the tough muscular substance underlying the mucous membrane. In this way we can be sure that we have removed all that is necessary. Care should be taken not to neglect the corners near the openings of the Fallopian tubes. Having thoroughly removed the thickened mucous membrane, the uterus is then washed out through Burrage's uterine speculum. It is sometimes necessary, especially if there is a good deal of diseased tissue present, to swab out the uterus with Churchill's tincture of iodine. Packing with gauze is unnecessary. No vaginal treatment is necessary and no after-treatment except a douche every day following the second day. If the patient is unable to use the bed-pan she may be allowed to sit upon the vessel to pass water. She may be permitted to get up in four or five days, and be discharged well in about a week.

## CHAPTER XI.

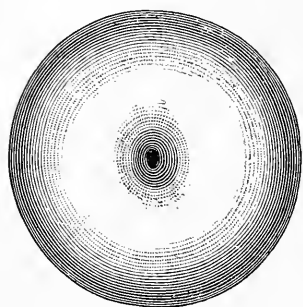
### LACERATION OF THE CERVIX UTERI.

THIS is one of the most common affections of the genital organs. For all practical purposes there is only one cause, viz., childbirth. As a great rarity it is occasionally met with after some operative procedure. The conditions which favor its occurrence at the time of labor are, in the first place, rapid labor. If the head is driven too rapidly through the neck, so that it has not time to dilate thoroughly, the giving way of the tissues is apt to follow. Occasionally we find a rigid or a deformed cervix as a predisposing cause. The effect of endocervicitis is sometimes such as to alter the tissues so that they do not readily dilate. The conical shaped cervix, which is often associated with a general lack of development, and accompanied by anteflexion, is sometimes the occasion of a laceration at labor. It will, therefore, be seen that in general the physician is not to blame for the occurrence of this accident. He may, however, contribute to its happening in two ways : by rupturing the membrane before dilatation is complete, and by too early use of high forceps.

*Description.* A laceration of the cervix usually takes place laterally, affecting one or both sides. We therefore speak of a unilateral (Fig. 121) or bilateral tear (Fig. 122). Occasionally the posterior lip is split (Fig. 123), more rarely the anterior. Where

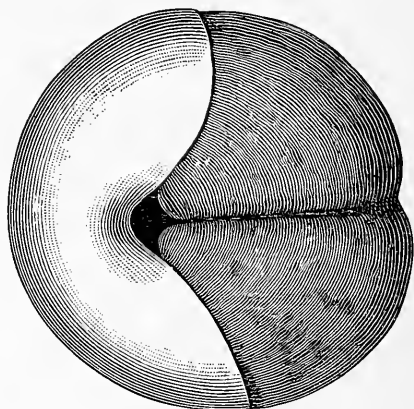
the tear occurs in several directions it is called stellate (Fig. 124). The laceration varies in extent from a slight nick to a deep tear which extends to the vaginal

FIG. 120.



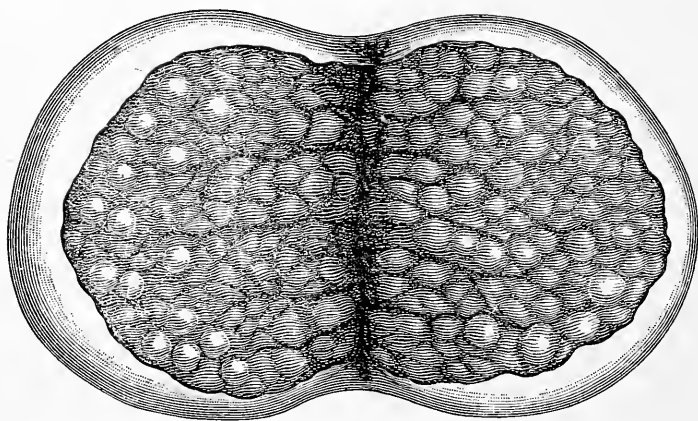
Normal Cervix.

FIG. 121.



Unilateral Laceration.

FIG. 122.

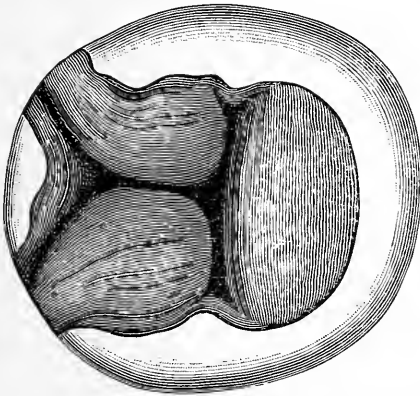


Bilateral Laceration.

junction, and virtually splits the cervix into halves. As a result of the tear we have several pathological changes. A raw surface is exposed to the friction of

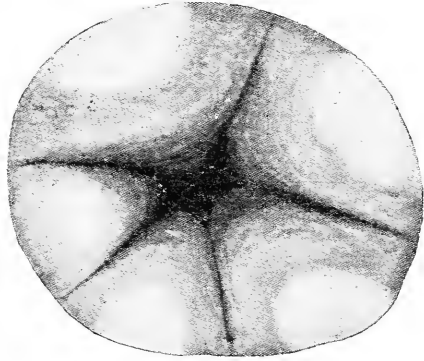
the posterior vaginal wall. This results in time in its being covered by a thin, transparent membrane, which is not true mucous membrane, nor, properly speaking, cicatricial tissue. It is red and shiny, bleeds easily, and is usually more or less studded with glands, which

FIG. 123.



Split of Posterior Lip.

FIG. 124.



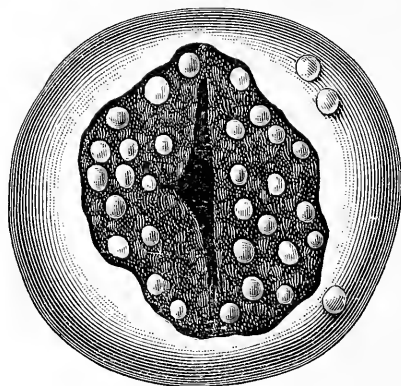
Stellate Laceration.

are partly those that naturally occur in the cervical canal, and partly a new formation. Under the influence of the irritation of the raw surface there is a tendency to hypertrophy of the tissues, and the lips sometimes become greatly deformed. There is apt to be a stoppage of the mouths of the glands and the formation of cysts constituting the so-called cystic degeneration (Fig. 125). At the angles of the tear we sometimes find cicatrices which are sensitive and give rise to reflex phenomena.

*Symptoms.* The symptoms of this condition may be divided into immediate and remote. The only symptom which occurs at the time of the accident

is hemorrhage. Should the tear be so extensive as to involve a branch of the uterine artery, we may have

FIG. 125.



Laceration with Cystic Degeneration.

a post-partum hemorrhage, which proceeds in spite of the firm contraction of the uterus. This should lead us to suspect the probable cause of the flowing, and to examine for evidence of a tear. We may have a somewhat retarded convalescence as a result of a laceration, due to the failure of the uterus to return to its normal size. Very often, and probably in the majority of cases, there will be no symptoms for a considerable length of time. When they do occur they are dependent upon the pathological changes which have already been spoken of. Leucorrhœa is one of these. The over-activity of the glands of the cervix, both of those exposed to friction, and those higher up in the canal, results in a hyper-secretion which easily becomes purulent. Pain of various kinds is often complained of. The most common seat is probably the



back. This seems to be associated with trouble with the cervix and is located in the sacrum. So, too, there may be pain in the abdomen, and in the thighs, probably the result of increased weight of the uterus. Quite frequently there are no local symptoms, or they are overshadowed by the reflex nervous phenomena.

It is by no means uncommon to find a patient who complains only of a loss of nervous force, inability to concentrate her mind upon her work, a change in disposition, headache and mental fatigue where there is a lesion of this kind, there being an entire absence of local symptoms. So, too, disturbance of the digestion is frequently met with.

*Diagnosis.* Bimanual examination will rarely give us more information than that the cervix is enlarged, slightly roughened, and it may be of irregular consistency, either softer, harder, or nodular. This only affords a presumption that there is a laceration. The speculum examination is necessary in order to be sure of the diagnosis. On exposing the cervix with Sims's speculum we see granular surfaces, either bright red where the covering is thin, or of a dull reddish color where it is covered with a more opaque and dense membrane. The conical shape of the cervix is lost. Instead we have the lips everted, hypertrophied, and a certain portion of the cervical canal exposed. The surface may be studded with little whitish or yellowish cysts. If two tenacula are hooked into the lips and the parts are brought together, so as to restore the cervix to its natural shape, the extent of the laceration can be judged. This, of course, is not possible if there is very

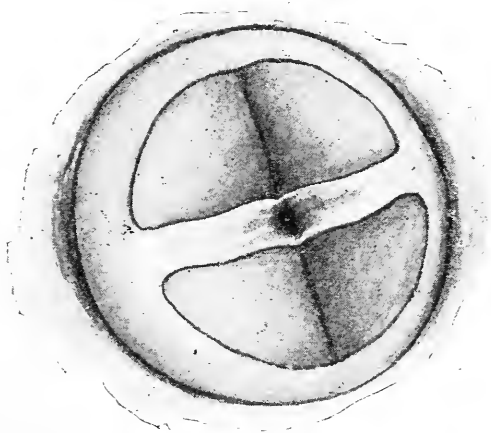
much hypertrophy. Sometimes the hypertrophy will be confined to one lip alone, in which case there is even greater distortion. Eversion is caused by the pressure downwards of the cervix upon the posterior vaginal wall, by which the lips are spread apart and rolled outwards. If, however, the uterus is retroverted, the vaginal walls hold the lips in apposition, so that, although there may be marked laceration, no eversion will occur. It is occasionally difficult to differentiate laceration of the cervix from erosion with hypertrophy of one or both lips. As a rule, the history of the case will decide.

*Treatment.* The first question to be decided in a given case is whether an operation is demanded or not. The rules which I have formulated are to operate in any case which gives rise to symptoms even if they are slight; to operate in cases of moderate or severe laceration, even if no symptoms are present. I have been influenced in regard to the latter by the fact that, in the majority of cases, symptoms will certainly follow a severe laceration, and even more so because experience has taught that 95 per cent. of all cases of cancer of the cervix occur in women who have had children, and it is fair to presume in women where there has been a laceration of the cervix. In other words, a lacerated cervix seems to offer a particularly favorable field for the development of cancer, and as a prophylactic measure I would repair all lacerations of any magnitude. For the minor cases where an operation is either considered unnecessary or refused, something may be done in the way of relieving symptoms

by simple local treatment. Endocervicitis and the cystic condition of the cervix may be relieved by puncturing, by application of Churchill's iodine, by depletion with glycerine tampons, and in cases of a heavy uterus by the use of a support. No sure cure can be promised, but temporary benefit may be gained and an operation at least postponed for the time being. Too often the benefit lasts only during treatment, and with its suspension the old symptoms return. In the majority of cases, therefore, an operation should be advised.

*Trachelorrhaphy.* This operation, known as trachelorrhaphy, is performed as follows: A certain amount

FIG. 126.



Trachelorrhaphy, both Sides Denuded.

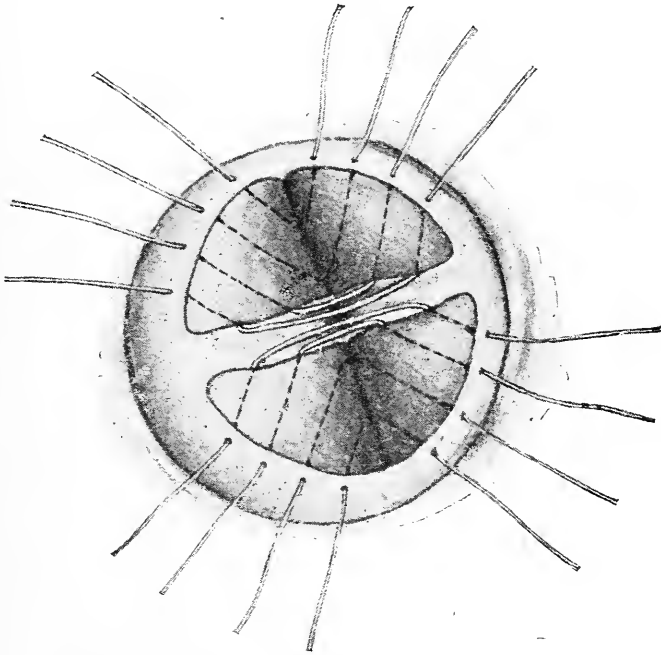
of preparatory treatment is occasionally necessary in order to get the patient into the best possible condition. This is carried out on the same lines as the local treatment mentioned above. The patient should

be prepared for operation as usual and all antiseptic precautions should be observed. The surgeon may operate with the patient either in Sims's position or upon the back, as is most convenient to him. Having exposed the cervix the lips are brought together by means of two tenacula, and the limits of the denuding accurately ascertained. If we have a bilateral tear to deal with the denuding is begun on the side where the tear is most extensive. A deep wedge-shaped piece is cut out from the anterior lip and the posterior lip, leaving the cervical mucous membrane intact, but extending laterally beyond the edge of the laceration (Fig. 126). It is better where there is much hypertrophy to remove considerable tissue, as it will have a favorable effect upon the enlarged uterus as well. The sutures are then passed through the denuded side, so as to control the flowing, in the following manner: A curved needle is seized with the needle holder and is passed through the tissues, beginning near the angle on the vaginal side of the cervix, passing inwards nearly to the cervical canal and coming out at the depression between the two lips.

It is then re-entered at a corresponding point on the posterior lip and carried outwards through the posterior lip, to emerge at a point corresponding to its point of entrance on the anterior lip. The next suture is carried parallel to the first and emerges on the edge of the cervical canal. It is then carried across and enters at a corresponding point on the other side, and is carried through the posterior lip (Fig. 127). Three or four sutures at intervals of a quarter of an

inch will usually suffice to close the womb on one side. The other side is similarly treated. The best material for sutures for this operation seems to me to be silver wire. Better apposition can be secured than with catgut, and it is non-irritating, which is a de-

FIG. 127.

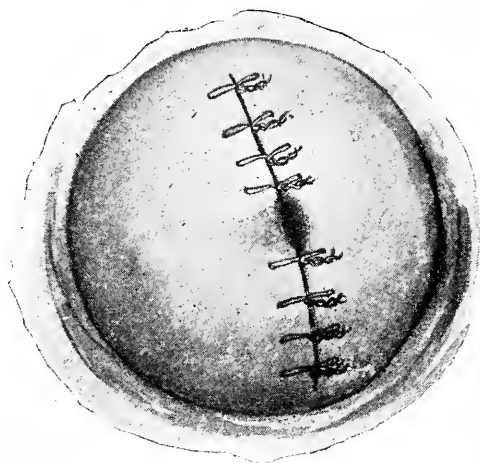


Trachelorrhaphy, Sutures in Position on Both Sides.

sideratum in those cases where, owing to the perineum being operated on at the same time, it is wise to leave the sutures in position for several weeks. The silver wire sutures are carried through the tissues by means of a guide of silk or linen thread. They are secured in the following way : A loop is made in each suture, and it is then drawn taut to within an inch or an inch

and a-half of the cervix. The ends are then seized with a pair of forceps, and are twisted over a shield placed against the edge of the wound, until it just

FIG. 128.



Cervix after Completion of Operation.

brings the two surfaces into close apposition. They are then bent over on the anterior surface of the cervix and cut off, leaving about an inch free (Fig. 128). Great care should be exercised to secure perfect apposition of the denuded surfaces. Upon this will depend the satisfactory condition of the patient afterwards.

The after-care is simple. The patient should be kept in bed for from ten days to two weeks. Light, nourishing diet should be given. She should have a daily douche of sterile water, and if the cervix alone has been operated on, the stitches may be removed by the time she is allowed to get up.

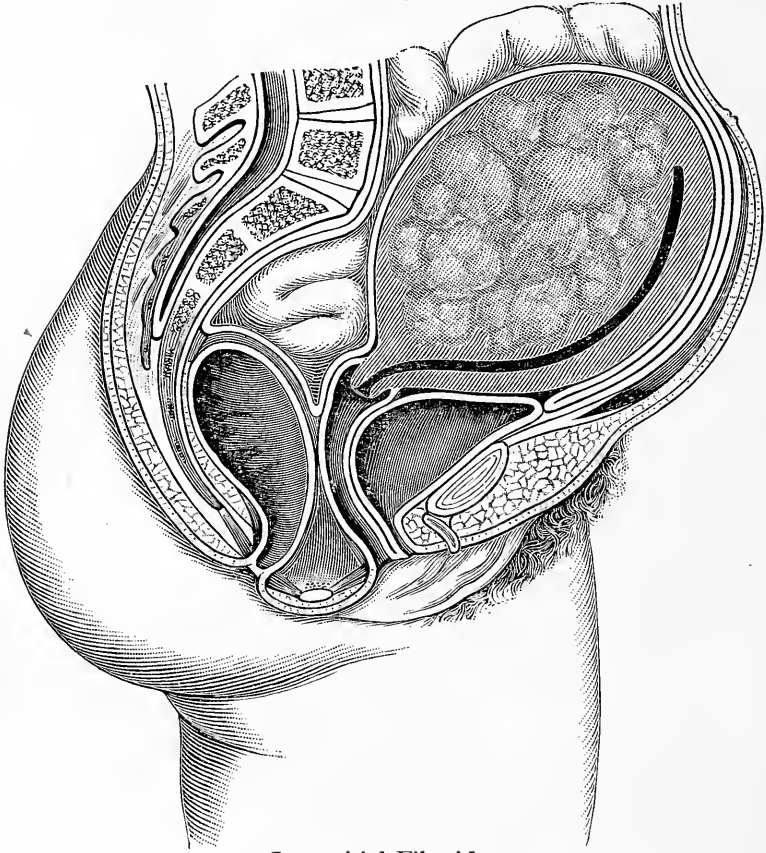
## CHAPTER XII.

### FIBRO-MYOMATA OF THE UTERUS.

As the name implies, these are new growths of the uterus, composed of the same elements as the uterine wall itself, and are generally called fibroids. If the muscular elements prevail they are more properly myomata; if they are more fibrous in structure they are fibromata. They develop in the substance of the uterus, and according to the part of the wall in which they grow are variously named. Those that start in the middle layer, and develop without projecting more towards the cavity of the uterus than they do towards the peritoneal cavity, are called interstitial (Fig. 129). If, however, they take their origin nearer the peritoneal side and, as they grow, extend towards the free surface of the uterus, they are called subperitoneal (Fig. 130). On the other hand, those that project towards the cavity of the uterus are called submucous (Fig. 131). Those of the latter variety may undergo changes by which they gradually become more and more forced out from the substance of the uterus, and become pedunculated (Fig. 132). If this process goes on so that they are completely extruded from the uterus, and remain attached to it merely by a small pedicle, they become what are known as fibroid polypi (Fig. 133). Fibroids may be either single or multiple. In the former case, the growth starts from

a single focus and develops into one more or less symmetrical tumor (See Fig. 129). In the latter they start

FIG. 129.



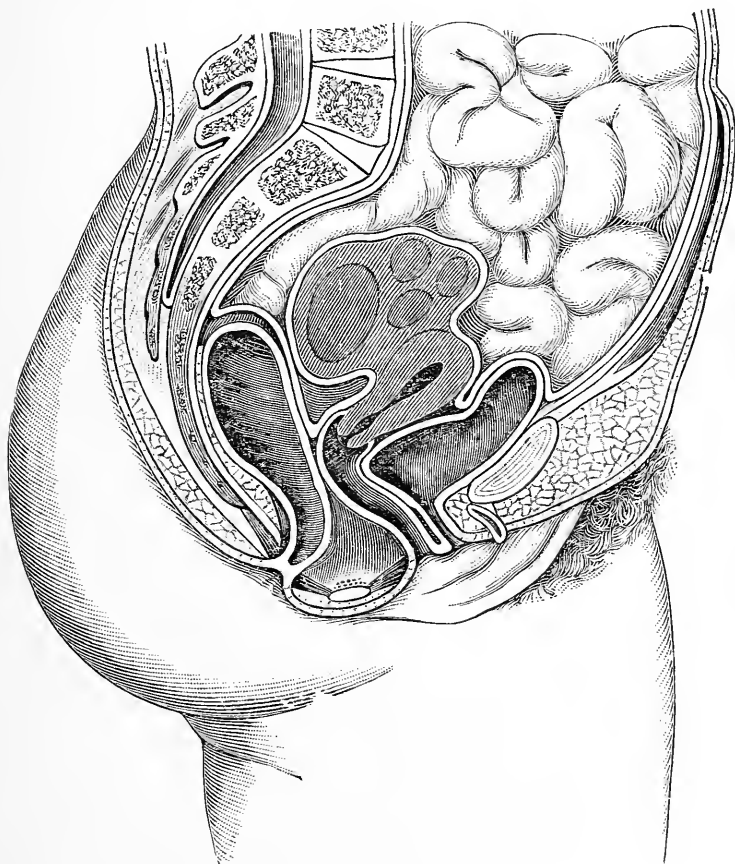
Interstitial Fibroid.

from a number of foci, and several tumors develop independently so that the substance of the uterus is studded with them (See Fig. 130). These growths are separated from the adjacent uterine tissue by its limiting capsule, and each tumor may be surrounded by its own sheath, or a number of them may form a group which has a limiting membrane of its own.



They are usually situated in the body of the uterus, rarely in its neck, and are of the class known as benign tumors, though they may occasionally undergo malignant degeneration. They occur during the actual sexual life of women, and are found both in single and

FIG. 130.

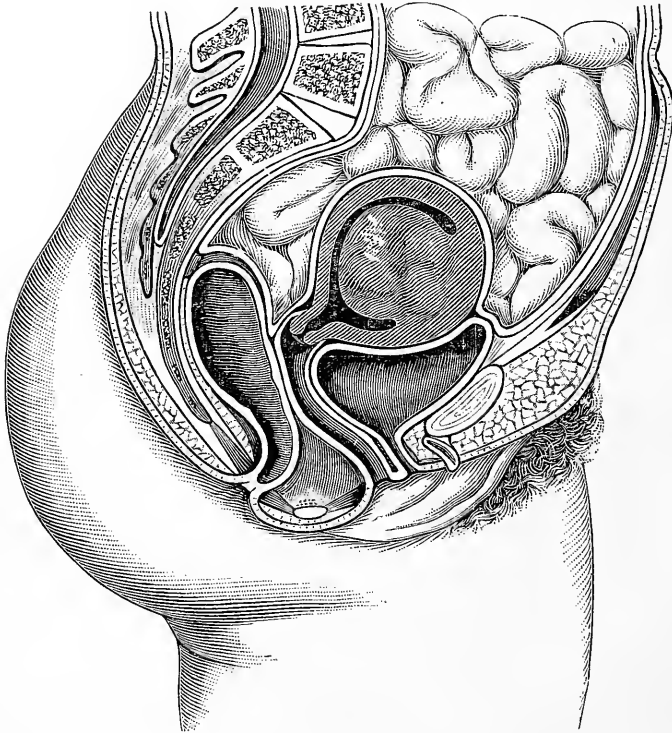


Subperitoneal Fibroid.

married women, but more often in women who have never had children. Where marriage is followed by pregnancy at more or less regular intervals, the tendency

to the formation of these tumors seems to be less than where women do not marry, or, if married, are childless. They may occur at any time after puberty, but are found most frequently between the ages of 30 and 45. Nothing definite is known as to their causation.

FIG. 131.

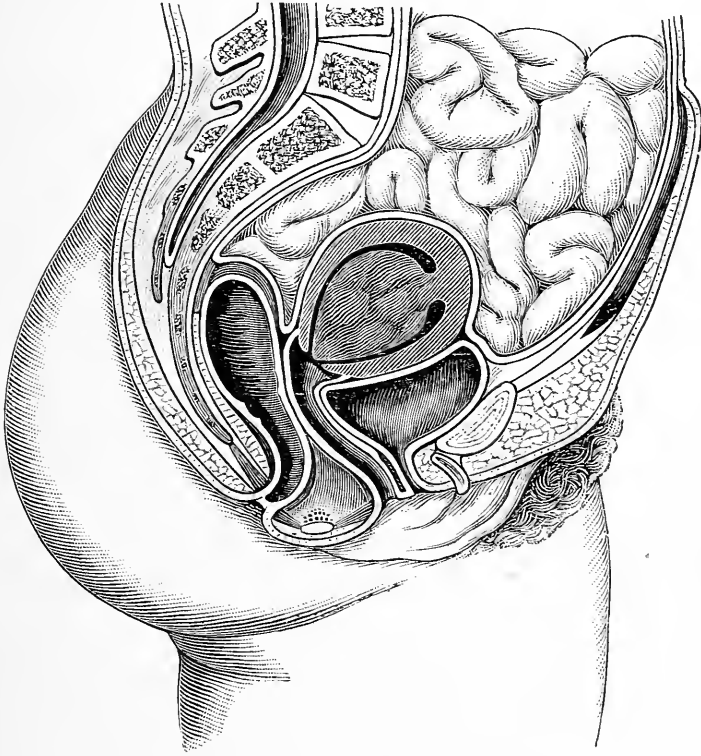


Submucous Fibroid.

There is no fixed rule as regards their rate of growth, and they vary much in this respect. The same tumor will act differently at different times. They are, in general, very slow in their development, but from causes which are not recognized they may grow rapidly for a time. In the case of multiple fibroids this in-

creased rate of growth may affect one tumor only, the rest remaining quiet. An increased amount of blood

FIG. 132.

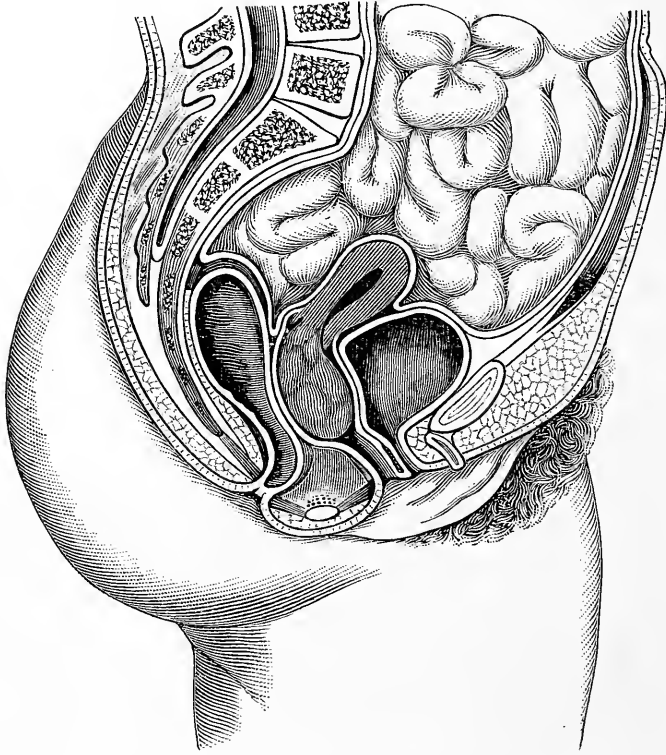


Submucous Fibroid Becoming Pedunculated.

to the organs would seem to favor their rapid growth, and this is seen in those cases of fibroids where pregnancy occurs. Under the influence of pregnancy the tumor will increase rapidly in size. After labor, when the uterus undergoes involution, it sometimes happens that the tumor either wholly or to a large extent disappears. This is by no means the invariable rule. In general it may be said that the effect of the menopause

is to arrest their growth, at least they rarely increase much after the change of life. Sometimes they gradually atrophy and disappear altogether, while frequently they merely become smaller and cease to give rise to symptoms. Exceptionally they undergo no change whatever.

FIG. 133.



Fibroid Polypus.

*Symptoms.* The symptoms which we observe in connection with these growths vary according to their size and location. There are three main symptoms which we find associated with fibroids—hemorrhage, pain, and pressure symptoms. Hemorrhage is, perhaps,

the most constant of these symptoms. It usually begins as an increased menstrual flow; the sickness lasts longer and is more profuse than formerly. Later there may be metrorrhagia in addition to menorrhagia. This may be so severe that, on the slightest exertion, the patient loses blood, becomes anæmic, faints easily, and may in exceptional cases die from loss of blood. This symptom is associated with the sub-mucous variety, or those cases of the interstitial form which tend to grow towards the cavity of the uterus. As they approach nearer the pedunculated, the hemorrhage is apt to be more profuse, and is particularly marked in connection with fibroid polypi, and the amount of the flow appears to be quite independent of the size of the tumor. A small fibroid tumor may in this respect be more serious than a very much larger one. The pain from these growths may arise from several causes. In some cases it is due to a stretching of the peritoneum over the tumor, especially if it is growing rapidly. Where we have multiple fibroids and they develop irregularly, the painful area may change as one or the other nodule starts to grow. As a second cause, the pain may be from actual pressure upon the nerve trunks by the large tumor. We have pain also in connection with the extrusion of fibroids from the uterus as they become polypoid. This latter pain is like little labor pains.

Pressure symptoms are, as a rule, associated only with large tumors. Where they attain considerable size and fill up the lower abdomen, reaching as they may above the umbilicus, they must necessarily press upon and displace other organs. They may press

upon the bladder and prevent its holding a normal amount of urine, thus causing the patient to pass water frequently ; or on the rectum, inducing constipation ; or on the ureter giving rise to trouble in the pelvis of the kidney, or on the bowels, with resulting digestive troubles. Pressure upon the blood vessels will also show itself by causing pain in the thighs, and in marked cases œdema of the lower extremities.

*Diagnosis.* On bimanual examination we may notice several things. In the first place, the increased size of the uterus. Instead of the cervix enlarging gradually, and only very slightly as it passes into the body of the uterus, we find that it expands rapidly, so that through one or another of the cul-de-sacs we feel a large mass continuous with the cervix itself. Pressure on the enlarged uterus over the abdomen will be transmitted through the cervix to the finger in the vagina. The bimanual examination will also reveal to us, if such be present, an irregularity of outline. This is not always found, but if present is strongly indicative of the existence of fibroid tumors of the uterus. This examination will also show us the consistency of the tumor, fibroids being hard and non-fluctuating. As a rule not only is the bulk of the uterus increased, but its canal is lengthened. To determine whether its canal is deeper than usual we make use of the sound. If we have an increased depth, it adds to the probability of the growth being a fibroid. Sometimes the canal is tortuous, and a rigid instrument cannot penetrate to the end. To overcome this difficulty we may make use of a flexible bougie or catheter, which

will follow the curve of the canal, and show us its depth. Palpation of the abdomen will reveal to us the size of the growth, its relation to the pelvis, its mobility, and its density.

The differential diagnosis from other tumors of the abdomen is not always easy. The uterus may be enlarged as a result of sub-involution. In this affection, however, the uterus is symmetrically enlarged, is usually not much beyond normal in size, and symptoms of hemorrhage are generally wanting. Pregnancy may be mistaken for a fibroid. Here the history must be very carefully gone into as regards menstruation, the nausea inquired about, and the breasts examined for any changes. If the tumor extends above the pelvic brim we should listen for the foetal heart, the bluish tinge of the vagina should be looked for, and a softened condition of the cervix which is characteristic of pregnancy. The uterus will be softer to the feel than is usually the case with fibroids. It should not be forgotten that pregnancy and a fibroid tumor may both be present, a condition which is often very difficult of diagnosis.

Ovarian tumors are sometimes mistaken for fibroids. It should be remembered that an ovarian tumor usually starts at the side of the pelvis ; fibroids in the middle. When small, an ovarian tumor can be felt on bimanual examination to be distinct from the body of the uterus. When they are larger and nearly fill the abdomen, the presence of fluid may be demonstrated by percussion, a wave of fluctuation being present. The uterus will usually be found crowded forward to-

ward the pubes, and the passage of the probe will demonstrate that the canal is of normal depth. There is one class of ovarian tumors which are with the greatest difficulty diagnosticated from fibroids, viz., small ovarian cysts which are closely adherent to the uterus itself. These are so firmly bound down by adhesions that they cannot develop freely, but are crowded downwards, and lie apparently in close continuity with the uterus. The fact that severe hemorrhages are a frequent accompaniment of this class of tumors makes the differential diagnosis more difficult.

Pyo- and hydro-salpinx may occasionally simulate fibroids, but, as a rule, are more painful, elongated, sausage-like tumors, instead of round, and not as hard to the feel. They may usually be recognized as distinct from the uterus itself.

*Prognosis.* The prognosis, as regards life, is good, *i. e.*, these tumors being benign do not necessarily endanger life. They may, however, become a source of great danger from the long continuance of hemorrhage, or as the result of pressure on other organs, therefore they should not be regarded as of slight importance. When small they may exist for years without symptoms, and it is undoubtedly true that many women go through life with small growths of this character without ever being aware of it. Inasmuch, however, as serious symptoms may develop, they should, if their existence is known, be carefully watched and appropriately treated should the occasion arise. With appropriate treatment the prognosis as to complete relief and restoration to health is good.



*Treatment.* Our methods of treatment may be directed either towards relieving symptoms, diminishing the size of the growth, or removing it altogether. Which of these objects we shall strive to attain will depend upon the size and location of the tumor. In the case of small tumors of the sub-peritoneal or sub-mucous variety, hemorrhage will be the important symptom, and if that can be controlled, a serious operation may not be necessary. In a great many cases, therefore, measures for controlling the hemorrhage will be all that are required. Drugs have only a limited use in this connection. Ergot is, of course, the best known, and may be tried, but it will in a great many cases fail to accomplish anything. The cases where it is likely to do good are those where the tumor is small and nearly surrounded by normal uterine tissue, so that contractions of the uterus check the blood supply. Where the tumor has become extruded from the uterine wall, either partly or wholly, much less can be expected from this drug. In the case of fibroid polypi very little good will be accomplished. Ergot may be given either in the form of the fluid extract, or, if the stomach becomes upset from the prolonged use of the remedy in this form, ergot in pills may be substituted. One other drug has some virtue in controlling hemorrhage, viz., hydrastis. This may be tried where ergot fails, and will sometimes act better; it should be given in half-teaspoonful doses of the fluid extract three or four times a day. One method of treatment, with this object in view, is to diminish the amount of the menstrual flow by sys-

tematic and continuous packing. At the beginning of the flow the vagina should be tightly and thoroughly packed, and the packing changed as often as it is soaked through, and kept up until the flow ceases. This will usually diminish the flow to some extent, but if it fails to do so at the first sickness, its repetition month after month will sometimes be followed by surprisingly good results. If these measures fail, curetting the uterus under ether should be tried. In fact, where there is no objection to an operative procedure, it should be advised in the first place. This is done after the manner described in the chapter on endometritis.

Advantage may be taken of the dilatation for the purpose of curetting, to determine the degree to which any tumor may be projecting into the cavity of the uterus. As a rule, the uterus is softened by prolonged hemorrhage so that the dilatation can be carried to such a point that the finger will often be introduced with ease. Should a tumor be found with a small pedicle, it may with care be removed, the pedicle being cut with scissors. If a tumor is found projecting into the uterine cavity, but still attached by too broad a base to admit of its being cut off, good results will sometimes follow splitting the capsule. The administration of ergot after this has been done may be followed by the expulsion of the tumor. These methods already spoken of are for the purpose of modifying the one symptom—hemorrhage.

There are other methods of treatment which have for their object both the controlling of the hemorrhage

and the diminution of the size of the tumor ; one of these is electricity. This method of treatment, though not so much in vogue as a few years ago, may still be occasionally tried. It is known from its chief advocate as the Apostoli method, and consists in the use of the galvanic current sent through the tumor. In order that it may be applied directly to the tissues to be treated, one pole is introduced into the canal of the uterus, and the other placed over the abdomen. It is important that large quantities shall be used, and, in order that this may be done without burning the patient, the electrode on the abdomen is made large and moist. Usually a clay pad is made use of for this purpose. If the negative pole is used in the uterine cavity, the effect is to cause an absorption of the tumor and a diminution in its size. If the positive, however, the effect is to control hemorrhage. Many observers have used electricity in this way, and for a time there were great expectations of its results, but it has not fully justified what was expected of it. It has relieved symptoms, in some cases diminished the size of tumors, but it has been found painful to the patient, and complicated for the physician, and at the most it is really only palliative.

A method of treatment which has for its object a diminution of the blood supply, and, therefore, the atrophy of the tumor and lessening of the hemorrhage, is ligation of the uterine arteries. This operation is performed by making an incision in either lateral cul-de-sac into the base of the broad ligament, isolating the uterine artery, and ligating it in two places, and

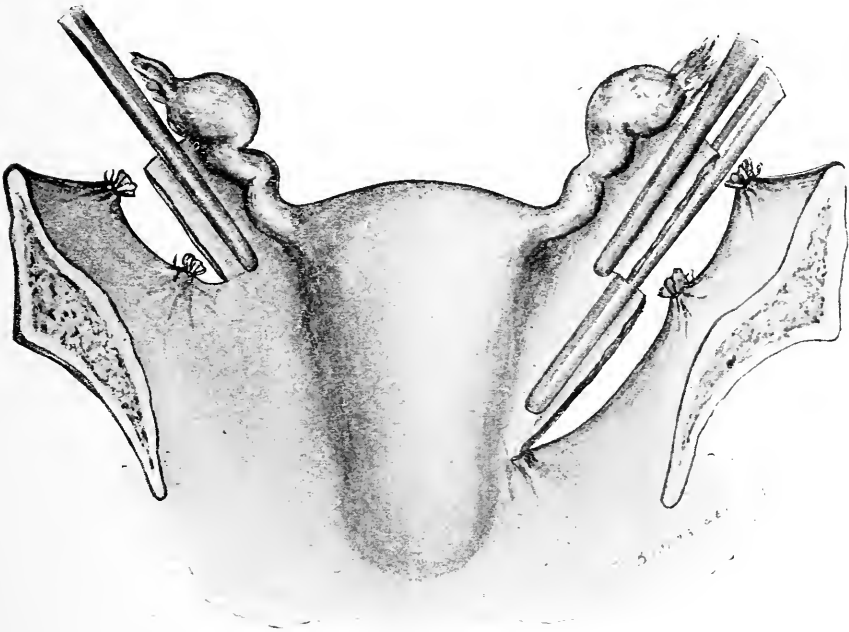
severing it between. This has been followed in the hands of several surgeons with very gratifying results.

The removal of the ovaries is another method of accomplishing the same ends. This was formerly very frequently done, because the removal of the tumor itself, or hysterectomy, had, before the technique was well understood, a large mortality. The removal of the ovaries brought about a premature menopause, and in a majority of instances where it was done, resulted favorably. None of these methods of treatment will accomplish much where the tumor is of large size. Here, in addition to hemorrhage, we have pain and pressure symptoms, and the only satisfactory form of treatment applicable to such a case is the removal of the tumor and usually the uterus as well. Exceptionally, where the tumor is sub-peritoneal, the growth alone may be excised, constituting what is known as myomectomy. If the tumor has a small attachment it is removed, together with a wedge-shaped piece of the uterus itself, and the wound brought together by interrupted silk sutures. Usually, however, where the tumor is sufficiently large to warrant an abdominal operation, the uterus will be found to be so involved that it better be removed as well. There are various methods of performing the operation of hysterectomy.

*Hysterectomy.* The method which seems to me to give the best results is that by which the body of the uterus is removed, leaving the cervix, and the stump is treated intra-peritoneally. The abdomen is opened in the same way as spoken of in the chapter which de-

scribes ovariectomy, the incision being made long enough to allow the tumor to be lifted out of the abdominal cavity. Beginning on the side which can be most easily reached, a ligature is passed outside of the ovary and Fallopian tube, around the upper part of the broad ligament, thus cutting off the blood supply through the ovarian artery. The side of the broad ligament towards the uterus is clamped and the tissues cut between (Fig. 134). A second section of the broad ligament is then tied, and a second clamp carried along

FIG. 134.

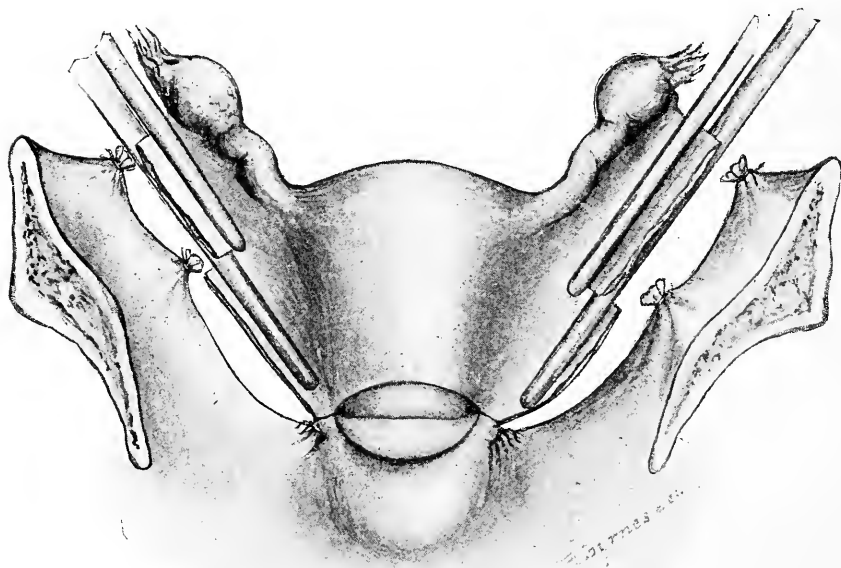


Abdominal Hysterectomy, First Step.

the side of the uterus, compressing the broad ligament, and as the blood vessels are small and few, the tissues may be cut to the edge of the uterus without danger

of hemorrhage. The same is then done upon the other side. The layers of broad ligament on one side are now separated, and, guided by the sense of touch, the uterine artery as it runs through the broad ligament is felt, and a ligature is passed about it with a ligature carrier. A strong silk ligature is usually used for this purpose and securely tied (Fig. 135). The same procedure is carried

FIG. 135.

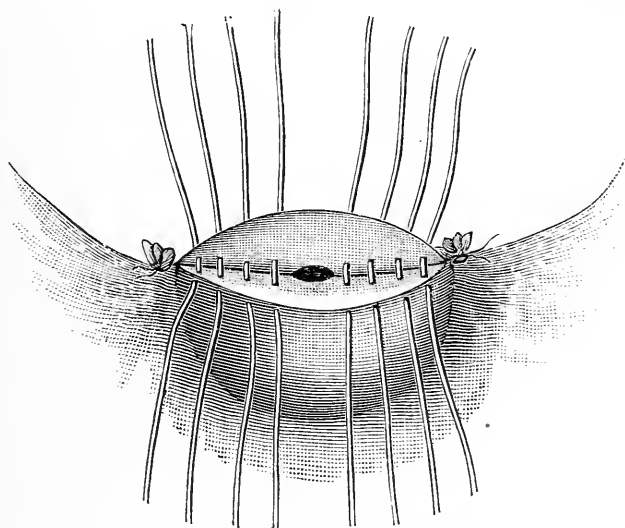


Abdominal Hysterectomy, Second Step.

out on the other side. A semi-circular incision is then made on the anterior surface of the uterus, connecting the ends of the lateral incisions of the broad ligament, and the peritoneum stripped off of the uterine wall, leaving a small flap of free membrane ; a similar flap of peritoneum is dissected off of the posterior uterine wall,

and the uterus is then removed. This is done by making a slanting incision through each wall of the uterus, which meet in the median line, and remove a wedge-shaped piece out of the cervix. Bleeding is usually moderate if the vessels are securely tied. The thermo-cautery is carried down through the cervical canal so as to prevent any possible septic trouble from this source. The edges of the stump of the cervix are then united by continued silk sutures and the flaps of peritoneum brought together over the whole (Fig. 136).

FIG. 136.



Abdominal Hysterectomy, Third Step.

In this way the peritoneal cavity is completely shut off from the wounded surface. It is important to thoroughly check all bleeding so that the wound will be dry, and no large collection of blood remain which may possibly not be absorbed, and so form an abscess.

The closure of the wound. and the after-treatment, do not differ from those of other abdominal operations. Some operators prefer to remove the cervix as well as the body of the uterus in performing hysterectomy. The advantages of leaving the cervix are that it does not mutilate the vagina, that it is an easier operation, and the cervix acts as a support and a preventive of prolapse of the abdominal viscera.

The treatment of a fibroid polypus which is found in the vagina is simple. The only thing to do is to remove it by making firm traction on it by means of vulsellum forceps, and severing the pedicle with scissors, as near its attachment as possible. Occasionally the tumor is so large that the pedicle cannot be reached, the mass nearly or completely filling the vagina. Under such circumstances the growth must be removed piece-meal, and this is sometimes a tedious operation. Hemorrhage may be severe, but can be controlled if the precaution is taken to twist the tumor so as to cut off the blood supply through the pedicle.



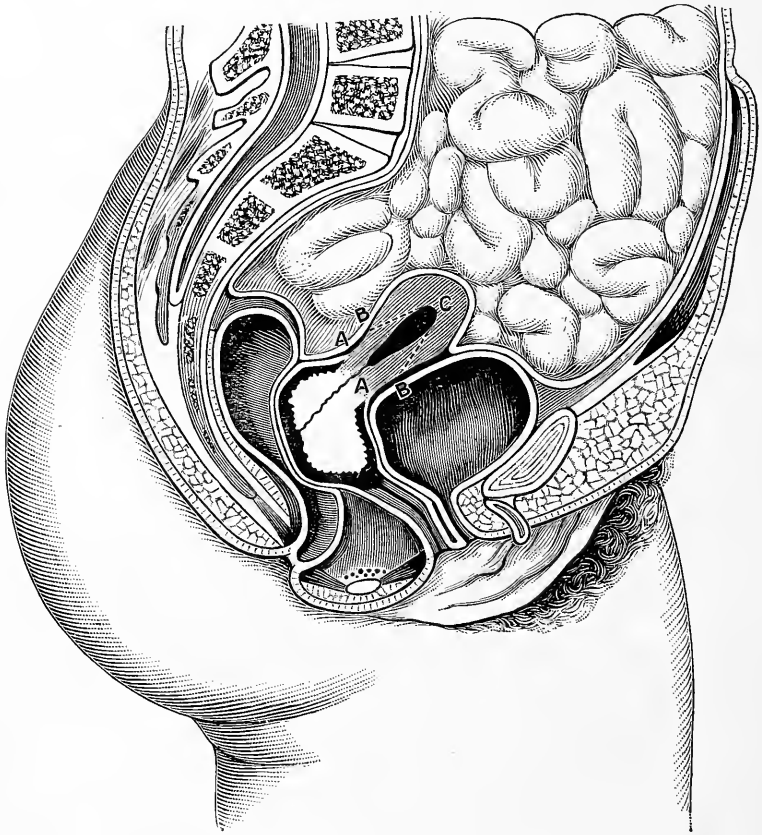
## CHAPTER XIII.

### MALIGNANT DISEASES OF THE UTERUS.

THE uterus is frequently the seat of malignant disease, perhaps more so than any other organ of the body, unless possibly the breast. Unfortunately it seems to be upon the increase in spite of attempts by many observers to discover its cause, and devise measures for its cure. It presents itself in various forms, both histologically and clinically, and I have thought it best to base the division of its various forms on its clinical appearance and mode of growth. I have, therefore, divided the forms of cancer into those which affect the vaginal portion of the cervix, the cervical canal, and the body of the uterus. These are the various starting points of the disease, but they may in later stages involve other portions of the organ. The cancer which starts on the vaginal surface of the cervix is of two varieties. The first starts as small, hard nodules under the mucous membrane, usually near the os uteri, very often upon the surface exposed by a laceration. They develop slowly, and only after a considerable lapse of time do they ulcerate and break down. There is at no time a large tumor. The nodules gradually coalesce, and as the process of breaking down progresses, an ulcer is formed which gradually deepens, and extends laterally until the whole cervix may be involved. This form is called *cancroid*. The other variety which

takes its origin upon the cervix, is a papillomatous growth which starts upon the surface of the cervix and gradually grows outwards, forming a tumor which may rapidly assume a size that will fill the vagina. It

FIG. 137.



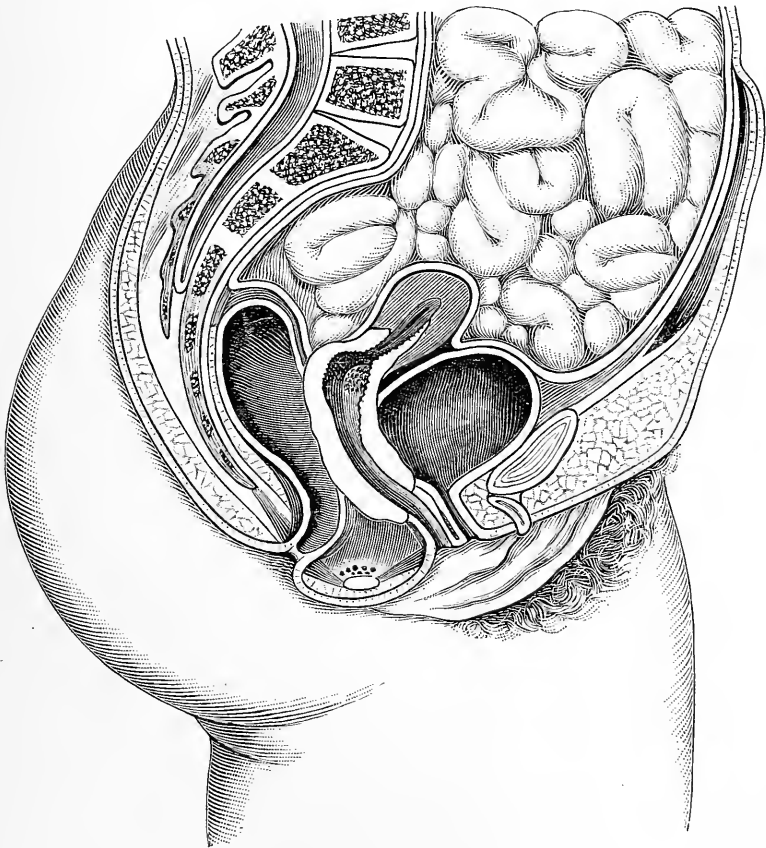
Cancer of the Vaginal Portion. So-called Cauliflower Growth.

usually has a small base, and extends laterally, having a cauliflower appearance, hence its common name, a cauliflower growth (Fig. 137). These tumors often grow rapidly, and usually attain considerable size be-

fore they break down. When they have sloughed away, there is left the ulcerated depression as in the former case.

The form of malignant disease which affects the cervical canal begins insidiously. It starts in the canal, probably affecting the glands and epithelium, and is

FIG. 138.



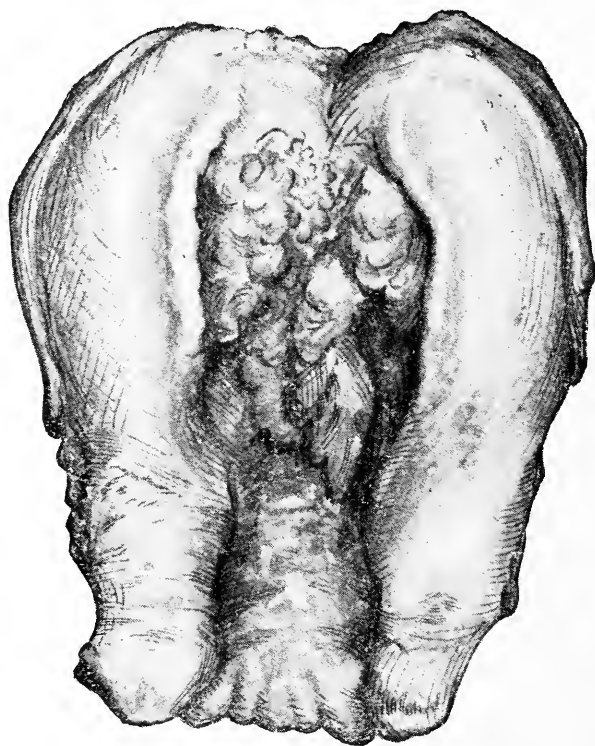
Cancer of the Cervix.

apt to extend laterally through the cervix, and commences early to invade the broad ligaments. It has

often completely infiltrated the tissues of the cervix, with almost no external sign of its appearance. Later the shell of cervical tissue ulcerates away and disappears, leaving a deep, crater-like depression in the vault of the vagina (Fig. 138).

Cancer of the body is usually the form known as

FIG. 139.



Malignant Adenoma.

malignant adenoma. It is a glandular new growth, and is due to an extension of the glands downwards into the connective and muscular tissue of the uterus. It is usually limited in its area, slow in growth, invades

the tissues of the uterus very gradually, and forms small polypoid excrescences on the surface which break down readily, are soft and friable, and bleed easily (Fig. 139). These are the four forms of cancer which we most frequently recognize clinically, and under some one of these heads almost all cases may be classified.

*Causation.* The cause of cancer of the uterus is not known. It has a certain relation to laceration of the cervix, inasmuch as we find that from 90 to 95 per cent. of all cases of cancer of the uterus occur in women who have borne children, and where it is seen in the early stages, in a large proportion a distinct laceration is found.

Cancer may occur at any age after puberty. It is, however, exceedingly rare before twenty-five, but increases in frequency with each succeeding year, and is most common between forty and fifty, again decreasing in frequency with the age. Heredity has probably very little causal effect.

*Symptoms.* The symptoms of malignant disease of the uterus are unfortunately insidious in their onset. Usually the first thing which calls the patient's attention to any trouble is slight hemorrhage. This differs from the hemorrhages which are characteristic of fibroids, in that it usually occurs outside the menstrual period, and is very apt to start from some mechanical cause, frequently coitus. It recurs oftener and oftener, and may later be almost constant, though in the early stages it is very slight. As soon as ulceration begins, however, we find as a characteristic symptom sudden severe hemorrhages due to the

opening of an artery by the ulcerative process. These hemorrhages may sometimes be so severe as to threaten life. The next early symptom we meet with is discharge. This at first may be watery, so much so that patients have consulted me for what they supposed was incontinence of urine, but which proved to be malignant disease. Very soon the watery discharge becomes cloudy, begins to be offensive, and is greatly increased in quantity. This is one of the most characteristic and distressing symptoms of the disease. As the process advances, and the tissues break down rapidly, there is a great deal of decomposed matter which comes away. Pain is usually not present at the onset. When it does occur, it is apt to be referred to the back; later, the pain begins to increase in severity, and grows constant so as to prevent sleep, and has to be controlled by opiates. In the later stages it is referred to the lower abdomen, and is of a peculiarly gnawing or grinding character. The general health very quickly becomes affected. The appetite suffers. There is nausea, and in consequence of the pain and lack of nourishment the patient loses flesh, and presents the cachectic appearance so characteristic of malignant diseases. Sleep is interfered with, the strength gradually diminishes until the patient becomes bedridden, and usually a general infection of the whole system, a sort of blood poisoning, ensues, from which the patient dies.

*Diagnosis.* Diagnosis of cancer of the uterus is in the majority of cases easy. Usually it is so far advanced by the time the patient seeks advice, that there

can be no doubt as to the nature of the disease. On examination either a tumor is found in the upper part of the vagina attached to the cervix, and of a dull reddish or grayish color, which bleeds easily and is bathed in a foul discharge, or the examining finger finds at the seat of the cervix a ragged crater-like depression with indurated edges. Sometimes the disease is limited to the cervix alone ; in more advanced cases it involves the vaginal walls. In early stages a small ulcerated patch might be mistaken for an erosion, possibly a hard chancre, or a very extensive and angry looking laceration of the cervix. From all these it may be differentiated by snipping a portion from the base, and subjecting it to a microscopical examination. A large cauliflower growth might be confounded with a sloughing fibroid. The differential diagnosis can be made by observing that the fibroid is firmer, does not bleed so easily, and has a distinct pedicle, which is attached higher up in the cervical canal or in the body of the uterus. The diagnosis of those forms of cancer which occur either in the cervical canal or in the body of the uterus, and where there is no external appearance of the disease, must be made by examining the specimens of diseased tissue removed by the curette.

*Treatment.* Treatment of malignant diseases of the uterus will depend upon the stage at which it is first seen. If the disease is seen early, especially before there has been an extension outside of the limits of the uterus, there is a chance that the radical operation of hysterectomy will prove successful ; if, however, the disease has advanced into the broad ligaments, there

is little hope of a radical cure by any operation, but even in these hopeless cases an operation is sometimes indicated in order to relieve certain distressing symptoms, or render the last sickness less trying to patient and friends. The palliative treatment for cases which are beyond the help of radical measures is as follows: The hemorrhage and foul discharge may be for a time checked by thorough curetting under ether of all the diseased tissue that can be scraped away with the sharp curette, and cauterizing the base with the Paquelin cautery. This will for a time arrest the progress of the disease and make the patient more comfortable. If the symptoms return with their former severity it may have to be repeated. Sometimes an additional amount of diseased tissue may be removed by the use of chloride of zinc. This is applied in the following manner: Little pledgets of cotton are soaked in a fifty per cent. solution of chloride of zinc, and these are then packed carefully into the ulcerated cavity of the cervix. The excess of the caustic is prevented from attacking the healthy vaginal walls by the use of bicarbonate of soda thickly applied at the edge of the tampon. In the course of a week or ten days, the chloride of zinc with its surrounding slough will come away. The foul odor is one of the most difficult things to treat. Douches should be frequently given, and various substances may be added to the douche, such as creolin; keeping the vagina packed with tampons soaked in creolin or powdered with aristol is perhaps the most effectual method of destroying the odor.



A severe hemorrhage may be controlled by firm packing with cotton, the upper part of which is soaked in Monsel's solution. Pain may be combated with opium. In so hopeless a disease there is no reason why morphine should not be given in sufficiently large doses to render the patient as comfortable as possible under the circumstances. The dose will have to be increased as time goes on, and it can be and should be freely given to the point of tolerance.

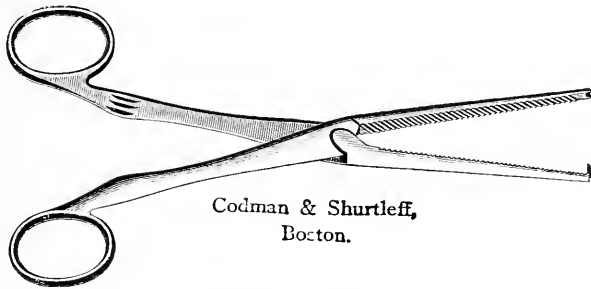
The question of a radical operation will depend upon the extent of the disease. The prognosis is most favorable in cases of malignant adenoma confined to the body of the uterus ; next, in cases of epithelioma of the cervix where the disease has not extended to the vaginal walls ; least favorable where the disease shows a tendency to, or has already invaded the broad ligaments. A careful examination of each case should therefore be made to determine if possible whether the process is still within the limits where an operation holds out any chance of success. The broad ligaments should be very carefully palpated, the mobility of the uterus tested, and any thickening of one side or the other should be looked upon with suspicion. A certain amount of infiltration of the vaginal walls is not necessarily a bar to operation. The radical operation of hysterectomy may include a certain amount of the vaginal wall as well. There are two operations which are applicable to cancer involving the cervix alone : one high amputation ; the other hysterectomy. While it is true that removing the whole uterus would seem to give the patient the best chance against recurrence, yet

there have been strong advocates in favor of high amputation for certain selected cases. It has the advantage of being a less serious operation, of affording an opportunity for a second operation in case the first is not successful, and therefore it may exceptionally be considered the wisest course to pursue. It consists in cutting out a cone-shaped piece from the uterus, the apex reaching considerably above the internal os as indicated by the lines *B C B* in Fig. 137. In this way the incision is kept outside of the limits of the disease, and the use of the cautery following the knife adds to the efficacy of the operation. The peritoneal cavity, particularly in the posterior cul-de-sac, is liable to be opened, but this does not add to the gravity of the operation. The uterine arteries occasionally have to be tied on account of hemorrhage.

Most cases of cancer of the uterus are to be treated by the removal of the whole organ, viz., hysterectomy. This is usually done through the vagina. The cervix having been seized with vulsellum forceps is drawn down towards the vaginal outlet. The vaginal attachment is then separated by means of the cautery throughout its whole circumference. The tissues are then pushed upwards with the finger, care being taken to keep close to the cervix, first posteriorly so as to open the peritoneum in Douglass's fossa, then anteriorly, separating the bladder and uterus until the peritoneum is reached here as well. The openings are extended laterally to the borders of the broad ligaments on either side. There are two methods of freeing the uterus: one by the use of the clamp, the other

by ligatures. If the clamp method is used a strong pair of forceps (Fig. 140) is made to grasp the base

FIG. 140.



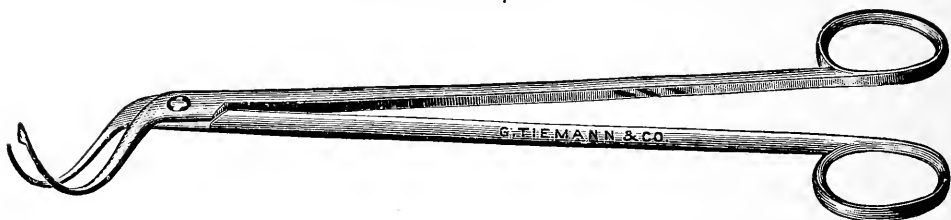
Clamp Forceps.

of the broad ligament close to the uterus on one side and clamped securely, the tissues being divided close to it on the uterine side. A second clamp is then applied higher up on the broad ligament in a similar way, and the same is then done upon the opposite side. This usually frees the uterus except its attachment to the upper part of the broad ligaments, where the Fallopian tube and round ligament are situated. A third clamp will usually secure these, and, the tissues being cut, the uterus comes away. The clamps are left in situ to control hemorrhage.

The method by ligature is usually more difficult. It consists in passing a ligature by means of an aneurism needle, or ligature carrier (Fig. 141), around the uterine arteries in the bases of the broad ligaments and controlling the hemorrhage in this way. The attachments of the broad ligaments are then divided, and any bleeding points secured as they appear. Another ligature is used to control the ovarian artery, and the uterus

is cut away. A wad of iodoform gauze is passed into the opening in the vagina to keep the intestines from prolapsing. If clamps are used they should be left on for forty-eight hours, and then carefully removed. The danger from hemorrhage at this time is very slight.

FIG. 141.



Cleveland's Ligature Carrier.

The ligatures are usually left until they come away of themselves, which is sometimes a very long time. There is usually very little shock following this operation ; patients recover rapidly and in successful cases there is no return of the disease. Unfortunately in the majority of cases where this operation is done there is sooner or later a return of the disease, and the patient succumbs, as there is nothing further that can be done.

## CHAPTER XIV.

### DISORDERS OF MENSTRUATION.

IN a large proportion of the gynecological cases which the physician is likely to see in his daily practice he will find some disorder of menstruation, either as the sole difficulty or as complicating other troubles. This function occurring, as it normally does, every month during thirty or thirty-five years of a woman's life, has a very important bearing on her physical condition. It is, therefore, highly essential that the physician should be thoroughly conversant with the various irregularities which he so frequently meets with, and be able to treat them with skill.

*Normal menstruation.* It is essential, however, before proceeding to the consideration of the anomalies of menstruation, to understand it in its normal aspect. Menstruation is a periodical flow of blood from the genitals, beginning at puberty and lasting until the menopause, and occurring about every twenty-eight days. Its relation to ovulation does not concern us here, as we are merely considering it in its practical bearings. The flow may vary in duration and amount within the limits of health very markedly. The amount of blood lost, which is the important fact to be learned in most cases, cannot be absolutely determined. A fair estimate of the amount of the flow may, however, be made in the following way : The ordinary

method of protection during the catamenia used by women in civilized countries is by means of napkins, folded and carried between the thighs, the ends fastened to a bandage around the waist. As they are ordinarily folded there are eight thicknesses where they come over the vulva. The amount of blood required, on an average, to soak a napkin folded in this way, so that the stain goes through the several thicknesses and appears on the outside, is a teaspoonful and a-half, or a little more. The inquiry, therefore, should be made of the patient how many napkins she uses, and whether they are soaked through or not. This will give an approximate idea of the amount lost, which can be made more accurate by inspecting the whole number of napkins used during the sickness. This is more important with unintelligent patients, for there is a popular belief that frequent changing of the napkins favors the flow ; hence, they are worn until they are drenched. To the amount of blood lost, as evidenced by the napkins, there must be added the clots which may be expelled, and be found either in the napkins, or in the chamber vessel, or in the water-closet. The size and frequency of these will often materially affect our estimate of the whole quantity. So, too, the length of time it lasts may vary greatly. Many healthy women menstruate but two or three days, while with others the flow keeps up a week or more. As a rule, the longer the duration of the flow, the greater the amount, but this is not invariable.

Perhaps it may be a fair statement to say that the normal menstruation lasts four or five days, that the

woman uses from six to ten napkins, of which half are soaked through in the sense spoken of above, the rest stained to a greater or less degree, and that it is accompanied by some discomfort or slight pain. Exceptions to this statement are very numerous. One woman normally uses from twenty to thirty napkins, and suffers if she does not flow steadily for six or eight days ; while another barely uses one napkin, and would be decidedly weakened by what would in others be considered a normal menstruation. There must be a great difference in the blood-making capabilities of different women to account for this. Some pain or discomfort is with civilized women so universal an accompaniment of this process, that its occurrence may fairly be considered normal. It certainly is a fact that the cases among us where no pain is experienced are so rare that they are curiosities. There are exceptional cases of women who show the still greater eccentricity of feeling better at the menstrual epoch than at any other time.

The abnormalities which we have to consider in connection with menstruation are four : amenorrhœa, or absence of menstruation, to which the use of the term should be restricted ; scanty menstruation ; menorrhagia, or excessive menstruation ; and dysmenorrhœa, or painful menstruation.

*Amenorrhœa.* Amenorrhœa may be either congenital or, as Edis calls it, primitive—using such a term to denote that it has never appeared ; or acquired—that is, after its appearance and duration for a time, it may cease.

CONGENITAL AMENORRHŒA.—Congenital amenorrhœa, as regards its causation, may be due, first, to a tardy development of the sexual life, so that the function appears either very late or not at all; secondly, to an atresia of the vagina, or an imperforate hymen, which does not allow the outward escape of the menstrual secretion. This should more properly be called concealed menstruation.

*Symptoms.* Cases of amenorrhœa of this class usually present themselves to the physician in this way: When a girl has passed the age at which the changes of puberty are expected, and her menstruation has failed to appear, it is very apt to occasion alarm. As it is popularly known that cessation of the menses is a common symptom of the advanced stage of phthisis, the converse is very easily deduced, viz., that the stoppage or non-appearance of the courses will lead to phthisis. Hence the girl is brought to the physician with the history of absence of the menstrual flow, and with the request for something to bring it on. The first question to be asked is whether there have been any molimina or not. If such have been present, for a longer or shorter time; if there is, at other times, pain in the pelvis, and a feeling of weight on standing, an examination should be proposed and urged, on the possibility of there being an imperforate hymen. A simple, ocular inspection will definitely settle this point; and any question as to atresia higher up in the canal may be solved by passing the handle of a cotton-stick into the vagina, as the parts are usually too small to admit the finger without so stretching the hymen as to cause pain.



If, however, there have not been any symptoms which would suggest menstruation, such an examination is not necessary. It is then, in all probability one of those cases of tardy development of the whole generative system.

*Physical examination.* The physical examination in these cases of imperfect development shows a more or less well-marked persistence of the infantile condition of the genital organs. The external genitals are small, the labia thin, the vulvar cleft, or the distance from the clitoris to the fourchette is less than usual, and the vagina is short. The cervix is apt to be long, thin and conical, often pointing in the axis of the vagina, and of a flabby consistency. The body is small, and the ovaries, if felt, are decidedly smaller than normal. The condition of the breasts can usually be ascertained under the pretext of examining the heart and lungs, and will sometimes be found to share in the non-development. Such patients are usually thin, anæmic, of a shy disposition, listless, poor eaters or with a morbid appetite.

There is another class of cases of amenorrhœa where the trouble does not seem to be from lack of development, but for some reason or other the nervous stimulus which results usually in congestion and hemorrhage is not strong enough to complete the circle, but stops short of the menstrual flow. In such cases we have the usual discomfort which accompanies unrelieved congestion, a series of symptoms which will be described more in detail in speaking of acquired amenorrhœa.

*Treatment.* The treatment of amenorrhœa due to

imperforate hymen is, of course, relief of the atresia by a surgical operation. The general principles on which the treatment of cases of amenorrhœa due to imperfect development or want of nervous force depends are so similar for the two classes that they may properly be considered together.

These two classes of cases very rarely call for local treatment, and general measures are often not able to accomplish much. The point to be gained by treatment should be the strengthening and developing of the muscular and nervous systems by food, exercise, out-of-door life and mental rest. Such patients should be taken from school, denied all social excitement, required to take exercise in an agreeable form—for example, horseback riding and calisthenics at home—and, as far as possible, should live a life of mental inactivity. More food, more blood, more muscle, more healthy nerve force, and, as a result, normal activity of all the functions. As far as possible, the patient should be sedulously kept from thinking of her own condition, and the ultimate object of all such hygienic treatment should be kept wholly in the background. Nothing can be more sure to defeat the end desired than for the patient to be continually expecting, month by month, the advent of the delayed menstrual flow. As helps toward a better state of general health, massage and electricity may be mentioned, and, under some circumstances, a sea voyage may be recommended.

*Drugs.* Drugs occupy a secondary place in the treatment of these cases, but should by no means be

discarded. By far the most valuable remedy in the cases of tardy development is iron, and the tincture of the chloride is, according to my experience, the most efficacious. It should be given largely diluted, and during its administration special pains should be taken to keep the bowels open. Manganese is also a valuable remedy and may be judiciously combined with the iron.

*Local Treatment.* Local treatment, however, may sometimes be called for in these cases. For example, if the patient has become engaged, and is contemplating matrimony, it would be a matter of great importance to bring the sexual system to a better state of development, and coincidently establish the menstrual function.

The most appropriate treatment is usually some form of stimulation applied to the uterus and ovaries, and there are several methods which may be recommended.

*Electricity.* First in importance is electricity. This should be first tried from the outside. A mild Faradic current should be passed from the ovarian regions through to the back for ten minutes every other day for several weeks. If that fails to bring on the catamenia the current may be applied directly through the uterus, one pole being placed against the cervix, and the other on the abdomen over the ovaries, varying from one side to the other. Or the application may be still more direct, by passing an electrode into the uterus itself. Only a very mild current can be used in this way.

In the cases of amenorrhœa referred to above, where there is congestion, and nature seems trying to establish the flow, but is unable, electricity in the form of galvanism may be employed with very good effect. Apostoli, of Paris, claims that to accomplish this result—viz., stimulating the menstrual flow—the negative pole should be in the uterus. The positive pole should be applied inside when the object is to check hemorrhage. The additional stimulus seems all that is needed to start the flow, and the circle once established, menstruation continues regularly month after month. Iron should be avoided in these cases, except possibly the combination of the sulphate with aloes, which is one of the best cathartics we can use. Nerve tonics, like strychnia, arsenic and manganese, are more often indicated.

ACQUIRED AMENORRHŒA.—Acquired amenorrhœa, or a cessation of the function after it has once become established, is very common. It not infrequently happens that after the flow has occurred once in a young girl, there is a period of several months before it appears again. This in itself is of no consequence if the cessation occurs after only one or two regular periods ; nor does it, as a rule, call for any treatment. Nature, if left to herself, will soon establish the flow on its proper basis.

*As a result of general debility.* It is a different matter, however, if such suppression come on later in menstrual life. Then it may be a symptom of some disturbance either of the general condition, or of uterus and ovaries, and as a rule needs treatment. Anything

which depresses the vital powers, whether of a physical or mental nature, is liable to interfere with the proper functional activity of the various organs of the body, and the uterus is no exception to this rule. While one or another set of organs may show most markedly the loss of tone and perversion of function, yet as a rule all the members of the body sympathize and are affected in a greater or less degree.

*Symptoms.* The digestive system is liable to be the first to show any change, even before menstruation is affected; and loss of appetite, dyspepsia, flatulency and constipation form a sequence of symptoms which we meet with every day, and which in turn give rise to or are followed by, other disturbances none the less suggestive. Such patients begin to lose color, become easily tired, and are inclined to lie down at intervals during the day; lose breath and suffer from palpitation of the heart on moderate exertion, especially on walking up hill, or going up stairs; find they do not get to sleep so easily, nor sleep as long as they used to, and are especially wakeful after any little excitement; become subject to headaches, complain of cold hands and feet, and are rapidly approaching a condition of invalidism. It is not long before symptoms referable to the sexual organs show themselves. Back-ache, pains down the thighs, increased leucorrhœa and a feeling of heaviness in the pelvis are the common symptoms, with which is usually associated some disorder of menstruation. This may exceptionally show itself as menorrhagia, but scanty menstruation or its entire suppression is by far more common. It is a cu-

rious fact that many young women will pass through the whole category of functional disturbances here spoken of without much concern or alarm until the threatened or actual stoppage of the menses appears. This, however, has a profound significance to them. It is a well-known fact that in the advanced stage of phthisis the menstruation usually ceases, and the two facts being thus associated, it is no wonder that the sequence of events becomes distorted, and the amenorrhœa comes to be regarded as the cause of the phthisis. Therefore, we are not infrequently consulted by young women, whose principal complaint is that their courses have stopped, who at the same time, on questioning, will give a history of a progressive deterioration in the general health, extending over a period of months, and possibly years.

Graily Hewitt has, more than any other writer, emphasized the importance of general causes in the production of uterine disease. He considers that a large proportion of the displacements of the uterus are due primarily to what he calls "chronic starvation," and that many menstrual disorders are no less dependent upon the same cause. The body being imperfectly nourished, there is a deficiency in the amount and quality of the blood made, and menstruation becomes scanty or ceases altogether. If this is so it gives us a hint as to treatment.

*General treatment.* The menstrual disorder is not to be treated as such, but the condition of the whole system which lies back of it. In fact, I consider that in many such cases the patients are very much better

off for not having their menstruation, and I deprecate any attempts to bring it on by direct means. Nature points out that the system can ill afford to lose even a small amount of blood every month, and any forcing of the function is directly injurious.

Treatment, therefore, should be directed toward improving the general health and nutrition of the patient by increased amount of food, moderate and regular exercise, and a quiet, healthful, systematic mode of life. In general, the principles laid down in speaking of amenorrhœa from want of development will apply here. Local treatment should be subordinated to general. It sometimes happens that there is in these cases considerable thin leucorrhœa, which in a certain way seems to take the place of the menstrual flow, and which may be irritating. If that is the case warm vaginal douches may be of value.

*A. associated with obesity.* Amenorrhœa is sometimes associated with obesity. Young women who grow stout rapidly find that their menses become scantier and scantier, and finally cease altogether. Such women, if they marry, are usually sterile, and treatment for the restoration of the function is not apt to be successful. I have been inclined to look upon the obesity in some of these cases as a result of the loss or temporary suspension of the functional activity of the ovaries. Analogies are suggested in the case of animals in which the ovaries have been removed, and which tend to take on fat, and the same thing has been observed as one of the sequelæ of the removal of the uterine appendages in women. The natural

tendency of women to grow stout after the menopause points to a similar connection.

When stoutness and amenorrhœa occur in a young woman the best plan for treatment is to reduce the flesh by some cure. This subject has been of late years very thoroughly studied, especially in Germany, and there are several distinct methods of treatment, based upon as many different theories, for the details of which the reader is referred to articles by Epstein and Oertel.

*A. from change of climate.* Amenorrhœa is not infrequently observed in this country in young women who have just come over from Europe or the provinces. The change of climate seems to be the only causal factor in these cases, as the patients are well nourished, and, as a rule, do not complain of other symptoms. After a varying period of from one to several months the sickness returns without treatment. It is possible that in some of these cases, especially in girls from the country who go into service in the city, the change of diet, restriction in the amount of exercise and outdoor occupations, may contribute their share in arresting the flow. In such cases it is well to prescribe iron, but I am in doubt whether the reappearance of the flow would not come about as quickly if left entirely to Nature.

*A. due to pregnancy.* One of the most common causes of amenorrhœa is pregnancy. The possibility of this being the cause of the stoppage of the menses should never be forgotten, whether the patient be married or unmarried. If the woman is married there



is, of course, no object in concealment on her part of her possible condition, and, as a rule, the non-appearance of the catamenia immediately suggests pregnancy to her, and she in turn communicates her suspicions to the physician. But if the woman has no right to be so she will, if possible, try to blind her medical attendant by some such statement as that she got her feet wet or caught cold when she was last unwell, that she had "once before gone four or five months without seeing anything and had come round all right."

Considerable tact is necessary in dealing with such cases. Information of value may be obtained indirectly by shrewd questioning. Increased frequency of micturition and some increase in the amount of leucorrhœa are usual symptoms of beginning pregnancy, and will be acknowledged without suspicion. The existence of the nausea of pregnancy can be ascertained by inquiries as to the digestion, condition of the bowels, distress after eating, etc., gradually leading up to the actual occurrence of vomiting.

*Hymen.* Then follows the vaginal examination. The first thing to be noticed in introducing the finger is the condition of the hymen. If that is so far intact that the passage of the finger causes pain, the presumption is very strong against the patient being pregnant. Not absolute, however, as it is a well-known fact that conception may occur with intact hymen, the semen being merely deposited on the outside of the vulva.

Of course, the converse of the proposition does not

hold true, that the absence of the hymen presupposes sexual intercourse. From my examination of young women for the first time, I am inclined to believe that the hymen is in many cases neither so well developed nor so tense as not to stretch easily at the first attempt at coitus, much less to be an obstacle.

*Vulva.* Inspection of the vulva may afford us information of value. The bluish tinge of the vulva and introitus, while by no means constantly present in cases of pregnancy, is, if present, an important sign in favor of its occurrence. Chadwick has shown<sup>1</sup> that its absence is not to be accepted as evidence that pregnancy does not exist, especially in the first three months, when satisfactory evidence is most needed, but that from (and including) the second month this color is generally present, and often of such character as to be diagnostic.

*Uterus.* Where pregnancy is suspected, the condition of the uterus is the next point to be examined. As regards the size of the organ, it is a difficult matter from that alone to say positively in the first two or three months whether it is enlarged or not. This is true if the patient is then seen for the first time, for there are other pathological conditions which will give rise to an increased size of the organ. But it is an easier matter to appreciate a slight change in size if the patient is one who has been under observation for some time, and whose uterus has been frequently examined bimanually. In such cases a slight change may often be readily detected.

<sup>1</sup> Transactions of the American Gynecological Society, 1886.

The first alteration in size or shape is, usually, a thickening of the uterus antero-posteriorly rather than an increase in length. Hegar has spoken of a peculiar softening and elasticity of the lower uterine segment, most easily made out posteriorly. The uterus in these cases lies a little lower in the pelvis, hence the backache, increased pressure on the bladder, and frequent micturition ; and the more profuse leucorrhœa is undoubtedly due to the increased congestion.

The softening of the cervix is a later symptom, and in its beginning of less diagnostic value, as it may be produced in its lesser degrees by any condition of the uterus accompanied by congestion or hemorrhage. The same thing is true of the bluish tinge of the vagina and vulva. It comes on later, as a rule, and is less pronounced in primiparæ than in multiparæ. It should, however, be always looked for.

*Breasts.* The condition of the breasts should last be examined, and there are subtle changes here which are among the earliest signs of pregnancy. Pain and some increased size are symptoms which the patient may be questioned about. The increased size of the areola, and the development of the papillæ of Montgomery, also occur early. There is one change which is found in a certain proportion of cases, which I am inclined to consider pathognomic, and that is a certain puffiness about the nipple. The skin appears raised, is soft and velvety, and feels like a delicate membrane covering some elastic substance. Where I have observed this I have never failed to find the woman pregnant. The dilatation of the veins of the

breast, which appear like blue lines under the skin, is another confirmatory circumstance.

I have been thus particular in describing the early symptoms of pregnancy, because these cases are very apt to come under the notice of the general physician as well as the specialist, and a correct diagnosis is not only more difficult, but also more important, where there is an attempt to deceive on the part of the patient. When amenorrhœa is complained of, the possibility of pregnancy should never be forgotten, and the use of the probe or sound should be postponed until the question is cleared up. Sometimes a shrewd patient who knows that absence of the menses is a suspicious circumstance will conceal the fact. It is then that the recognition of these first signs of increased size and softening of the uterus will be of value, and will prevent the passage of an instrument.

*A. from superinvolution of the uterus.* There is another cause of amenorrhœa occasionally met with, which is superinvolution of the uterus. Following confinement the uterus may atrophy, menstruation cease, and what is virtually the menopause be established at an early age. Treatment is of very little use in these cases. Nature seems to have exhausted the reproductive force of the woman with one effort.

*A. from mental emotion or cold.* Acute amenorrhœa, as a result of cold, or fright or other mental emotion, is sometimes observed. It may affect only a single menstrual period, or it may persist for two or three months, rarely more. If such stoppage occurs in the course of the menstrual flow the symptoms are apt

to be severe. There is usually a chill, followed by considerable fever, headache and backache, and severe pain in the pelvis. The pelvic organs become engorged; there is bearing-down pain, frequent micturition and pains in the thighs. The immediate treatment in these cases is to control the pain by sedatives, of which morphia is best, given in the form of suppositories, to relieve the congested uterus by the application of a glycerine tampon, and to favor the determination of blood to the surface by mustard foot-baths, warmth in bed, and diaphoretics.

If the menstruation fails to appear at the next month the treatment described in general for acquired amenorrhœa should be employed.

#### SCANTY MENSTRUATION.

SCANTY menstruation, which we are now to consider, is not perhaps so frequent an abnormality as some of the other functional disorders of menstruation, but in the cases in which it does occur it is an important factor, and deserves close study. Currier<sup>1</sup> has very happily proposed the name "*oligomenorrhœa*" for this condition, thus recognizing its claim for separate existence as a menstrual disorder, and bringing it into etymological harmony with the rest. It is necessarily a relative term, for with the varying amounts of the menstrual flow in healthy women what would be scanty for one woman would be profuse for another. The question to be asked and decided is: "Is the flow

<sup>1</sup> Medical News, February 23, 1889.

in the case of this particular woman sufficient?" Various factors have to be taken into consideration in answering this question. In the first place, we should, by inquiry into the patient's menstrual history, find out what was the natural amount lost when she considered herself well. Then, have any changes occurred in her mode of life, any sicknesses supervened, or have marriage or child-bearing so modified her sexual activity that scantier menstruation would be naturally expected? In the next place, are the symptoms complained of such as would be naturally the result of a decrease in the amount of the flow, and which would be apt to be relieved by making it more profuse?

*Symptoms.* We are warranted in considering menstruation insufficient when there are symptoms of unrelieved congestion. Such symptoms may be confined to the pelvic organs, or they may in addition, or even exclusively, affect the circulation in other parts of the body. Among the first are a sense of weight and fulness in the pelvis, often described by patients as "bearing down," backache, pains in the thighs and legs, sensitiveness on pressure over abdomen, amounting to pain when such pressure is deep enough to impinge upon the uterus, frequency of micturition, and pain on defecation. Among the symptoms in more remote portions of the body are cold hands and feet, numbness of the extremities, and especially headache, or a feeling of tightness in the head, more prominent in front and on top. Instead of the sense of relief and freedom from discomfort which characterize the cessation of the normal flow, the menstruation in these cases

ends, leaving this train of symptoms more or less pronounced.

*Symptoms of delayed menstruation.* As in cases of scanty menstruation the onset of the flow is frequently delayed, there is apt to be a train of symptoms which precedes the appearance of the catamenia which is characteristic. Pain of a dull, heavy character in the lower abdomen comes on, and the sickness seems imminent, but does not appear ; or if, after some more severe paroxysm of pain, there is a slight show, it ceases almost immediately, to be followed by increased suffering. This feeling of turgescence and pressure in the pelvis, sometimes accompanied by nausea and vomiting, may last from a few hours to several days, in some cases followed by a sufficient flow, in others only partially relieved by a scanty discharge, to be succeeded by the symptoms enumerated above, which in turn wear slowly away.

*Causes.* When we consider the causes of scanty menstruation we find that in part they are the same as those of amenorrhœa ; in fact, the former is often but the initial stage of the latter. We, therefore, find it in young women whose general health has suffered from overwork, insufficient food, lack of exercise, and overtaxing of the brain ; in stout, plethoric women who do not take sufficient exercise, and in women who have had some chronic inflammatory process in the neighborhood of the uterus. So, too, certain misplacements are liable to cause delayed, and, in some cases, scanty menstruation, particularly retroflexion of a large, heavy uterus.

*Physical examination.* Physical examination in these cases shows a reddened, moist, and rather puffy vagina, a firm but elastic, somewhat swollen cervix, and a heavy uterus, sensitive to pressure. Examination of the ovarian regions often reveals the presence of abnormally sensitive ovaries, which may or may not be swollen and slightly displaced. The passage of the probe is usually accompanied by pain, and followed by a drop or two of blood.

*Treatment.* As regards treatment, the obvious indication is, of course, to relieve the congestion. This should be attempted in two ways: first, radically, by treatment of the cause, if that is possible; and second, symptomatically, by temporarily unloading the blood vessels at or near the period of greatest congestion. The two may be advantageously carried on together in the majority of cases.

The treatment of the cause must be based on general therapeutical principles, such as have been laid down in the chapter on amenorrhœa. Every possible measure toward building up the general health of the patient must be adopted and, inasmuch as these cases are apt to become chronic, must be persisted in.

The immediate relief of the distressing symptoms directly due to congestion may be accomplished either by relieving the organs by depletion, or by driving the blood from them by applications. The latter method seems to me to be more applicable in the intermenstrual period, the former at the time of greatest congestion, whether just before or just after the flow. Given a case of scanty and delayed menstruation, the



course to be pursued would be this : Within a day or two after the cessation of the menses the vaginal cul-de-sac should be painted with Churchill's tinct. of iodine, and a glycerine dressing applied, and this may be repeated once or twice at short intervals. A day or two before the sickness is expected, pills of aloes and myrrh should be given sufficient to induce free action of the bowels, and a tampon applied as before. If previous experience has led us to expect a delay of several days, an application of electricity made each day will often be of service.

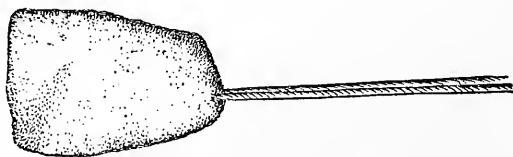
Emmenagogues are, in my experience, not reliable. The safe ones are practically inert, the more powerful ones too uncertain in their action. Sedatives, such as hyoscyamus, belladonna, opium, and valerian, will often modify the distress, but do not increase the flow. Alcohol, especially in the form of gin, has a popular reputation for forcing the flow, but beyond benumbing the sensitiveness to pain it probably has little effect.

*Applications.* Another procedure recommended for relieving the congestion, during the intermenstrual period is applications of iodine to the vaginal cul-de-sac. This is applicable when the scanty flow has failed to relieve the congestion, and the resulting train of symptoms has followed. The method to be employed is as follows : With the patient in the semi-prone position Sims's speculum is introduced, and the anterior wall held back with a depressor or cotton-stick. A cotton-stick is then armed with a small wad of cotton wound tightly about its end, and the point of this is dipped in Churchill's tincture of iodine.

This is then applied thoroughly to the whole cervix and vaginal cul-de-sacs. A small glycerine dressing is then placed in the vagina, and the speculum withdrawn. The dressing should be allowed to remain for twelve hours or more, and then be removed, and the hot douche resumed. This should be done as often as every fourth or fifth day, sometimes as often as every other day.

The glycerine dressings, referred to above, are made in the following way: A good quality of cotton, preferably not absorbent, is separated into strips about four inches long and an inch and a-half wide. These are folded over once, and a loop of string fastened to the middle. They are then soaked in water, wrung out as dry as possible, and are then wrung out for a second time in glycerine. A very little carbolic acid may be added to keep them from mildewing. They are then ready for use, and may be kept indefinitely (Fig. 142). Should they become too dry, a little glycerine may be added from time to time.

FIG. 142.



Glycerine Dressing.

A very convenient form of cotton to use for this and other purposes is, as it comes in a long narrow strip from the carding-machine at the mill, the so-called "sliver." Where a more marked depletive ac-

tion is desired, as just before or after the catamenia, it is better to use tampons made of prepared lamb's wool. It is elastic, will not mat on pressure, and will hold a large amount of glycerine in its meshes. A good-sized wad of it may be tied about with a string, and thoroughly soaked with at least an ounce of glycerine, and placed in the upper part of the vagina.

This may be allowed to remain three or four days, when it should be renewed, and the process kept up during the whole inter-menstrual period. It will cause a profuse watery discharge, for which the patient should be directed to wear a napkin, and the tampon should be removed at the first sign of the approaching sickness.

*Electricity.* The value of electricity in stimulating the uterus and increasing the menstrual flow is undoubted. It is most efficacious in the class of cases we have been considering, if applied just before and at the time the menstruation is expected. The methods are the same as were spoken of in connection with amenorrhœa.

*Puncturing and scarifying.* These methods may sometimes be employed with advantage, when a quick result is desired, and the uterus is very much engorged. It must be said, however, that puncturing is in itself at times a painful procedure, and often causes lameness and soreness of the uterus afterward, and it is difficult, without numerous and deep punctures, to cause enough blood to flow to give relief. Scarifying may also be unsatisfactory as regards the amount of blood removed. Either operation is best done with a sharp-pointed

uterine bistoury (Fig. 143), and the puncturing should be done on the face of the cervix, while the scarifying

FIG. 143.



CODMAN &amp; SHURTLEFF, BOSTON.

Uterine Bistoury.

will be more effectual on the mucous membrane lining the cervical canal.

## MENORRHAGIA.

WE come now to the consideration of the third abnormality of menstruation, viz., menorrhagia, or profuse menstruation. This is a much more common cause of complaint than either of the conditions which have been discussed, partly because it actually does occur more frequently, and partly because it is more alarming to the patient than either amenorrhœa or scanty menstruation, and hence she is more ready to seek relief. Like scanty menstruation, its significance is relative, as many women normally menstruate enough to soak twenty to thirty napkins, besides losing large clots—an amount of blood which would exsanguinate another woman, or at least keep her in a permanent condition of invalidism. Like the other abnormalities, this is, in the vast majority of cases, a symptom of some trouble either general or local, though we occasionally meet with cases where the most careful investigation fails to show any cause for the menorrhagia. Such cases must be considered idiopathic.

The first question which is to be answered in the

given case is: Does this woman flow more than she ought? What are the indications from which we may conclude that the flow in any particular case is excessive? A certain amount of lassitude and weakness is not uncommon with most women, but if such feelings persist through several days, and no other cause can be found for them, the attempt should be made to modify the flow, in order to see if that is not the main factor. When the amount of blood lost is clearly sufficient to keep the woman in a weakened condition, and is a drain upon her system from which she does not fully recover in the inter-menstrual period, it should be considered pathological.

*Causes.* The causes of menorrhagia may be broadly divided into general, or those arising from some condition of the system outside of the pelvic organs, and local—that is, due to some pathological change in the pelvic organs themselves. These latter are by far the most common.

*General causes.* Among the more frequent general causes of excessive menstruation may be mentioned debility, incipient phthisis, heart disease, and, temporarily, acute infectious diseases. The influence of a debilitated state of the whole system upon the menstrual function more often expresses itself, as has been pointed out above, in scanty menstruation or amenorrhœa, but occasionally the reverse takes place. These cases are usually young girls who, at the age of puberty and for a few years subsequently, have grown rapidly, pursued a too laborious course of study and taken too little exercise. Frequent examples of this

are to be found in our schools, where the competition is so great that proper attention is not paid to rest at the time of menstruation, and the strain upon the nervous system is kept up continuously. In addition, there is not infrequently to be added as a factor the excitement due to the claims of society.

In the later stages of phthisis the menstrual flow is apt to cease, but some recent investigations by Dr. Handford<sup>1</sup> seem to show that in incipient phthisis there is more apt to be menorrhagia, and that the children of phthisical parents tend to menstruate unduly early and excessively; a view which finds confirmation in Graily Hewett's opinion that "young women in whom there are signs of a tendency to, or an actual development of, tubercle are very frequently the subjects of profuse menstruation." This possible connection should be borne in mind when consulted in a case of profuse flowing in a young girl.

Heart disease is occasionally a cause of menorrhagia, and that organ should not be overlooked as a possible explanation in an obscure case.

*Local causes.* The conditions of the pelvic organs in which excessive menstruation occurs as a symptom are so many that to enumerate them all would cover pretty much the whole domain of gynecology. It may be safely stated that most of the diseases of the uterus, ovaries, and tubes, or pelvic connective tissue, may at some time in their course, or in some instances, be accompanied by menorrhagia. The important point to be decided always is what is the cause, inas-

<sup>1</sup> British Medical Journal, Jan. 22, 1887.

much as our treatment will be radically different as one or another source is found. As a rule, no specially active treatment is called for during the flow, unless the hemorrhage becomes so alarming that it must be checked. The cause having been found, the intermenstrual period should be chosen in which to carry out the appropriate treatment for the given case.

Where the trouble is with the pelvic organs themselves, we usually find the uterus in a state of abnormal congestion, either temporary, restricted to the few days preceding and following the flow, or, as is usually the case, persisting through the whole inter-menstrual period. Such congestion may be either active—that is, its cause may be some condition, usually in the uterus itself, by which an undue amount of blood is attracted to the organ, or it may be due to some pathological change, either in or outside the organ, on account of which the return of the venous blood is prevented, and we have a resulting passive congestion. This distinction is very important as regards treatment, for it will be radically different according as one or the other cause predominates.

The congestion, as a rule, first expresses itself in an increase in the amount of blood lost during menstruation, either the flow becoming more profuse or the discharge lasting longer, or both. Later there is very apt to be hemorrhage between the regular periods, so-called metrorrhagia, and much of what is said here as regards the treatment of menorrhagia will apply equally well to metrorrhagia.

It is not my purpose here to go into a differential

diagnosis of the various causes of menorrhagia, but merely to point out in a general way the different classes of causes, with especial reference to the several kinds of treatment applicable. Many of them admit of relief only by surgical interference, and will be spoken of more in detail in later chapters.

*Active congestion.* The first class of causes to be mentioned is those growths inside the uterus which, by their presence, attract an increased amount of blood to the organ. The most common of these are fibroids and polypi, then retained products of conception, and, lastly, malignant new growths. These, as a rule, cause active congestion, and the treatment for their relief is mainly intra-uterine and for the most part surgical.

*Active and passive congestion.* There then follows a class of causes in which both active and passive congestion play a part. The very common condition of hyperplastic endometritis, so-called granular degeneration of the uterine mucous membrane, is an example of this class. Here the first factor is often some chronic inflammatory condition of the whole organ, from subinvolution or displacement, or pelvic cellulitis, which later leads to degenerative changes in the endometrium, which in turn become a cause of active congestion, and keep up the increased flow. So, too, a submucous fibroid, which at first may directly influence a flow of blood to the uterus, may later, from its weight and pressure, dislocate the uterus, and thus interfere with the free return of the venous blood.

*Passive congestion.* A third series of causes directly occasions passive congestion. Such are displacements



of the uterus, later stages of chronic metritis, when tissue changes have begun, inflammatory thickening in the pelvic cellular tissue and tumors of broad ligaments, tubes or ovaries.

*Treatment.* The treatment of menorrhagia may be divided into internal, by means of medicines, and local. Inasmuch as it is manifestly impossible to give much local treatment at the time of menstruation, internal remedies are usually called for during the flow. Occasionally, it is true, the hemorrhage is so alarming that something must be done at the time. That, however, is usually restricted to measures to check the flow, irrespective of the cause, the treatment for the particular condition which causes the menorrhagia being reserved for the inter-menstrual period. The use of medicines is much the less satisfactory, as a rule, but there are cases where it is wise to abstain from local treatment altogether. In young girls who suffer from profuse menstruation, usually as a result of general debility, it is often unnecessary to make any examination, at least it should be deferred until the effect of general treatment has been tried, or until new and unexplained symptoms necessitate more radical measures. As a rule, the general tonic and hygienic treatment laid down for the condition of amenorrhœa, which is often the result of such debility, will suffice to modify the flow. If, in spite of it, the menorrhagia persists the examination should not be postponed. In the case of young girls it is often wise to give ether for the first examination, as in this way better relaxation is secured, and the patient's feelings of delicacy are respected.

*Drugs.* The drugs on which we mainly rely in our treatment of menorrhagia are ergot, hamamelis, gallic or tannic acid, the dilute mineral acids, hydrastis Canadensis, preparations of iron and iodine. Though treatment by internal medication is less reliable than by local measures, and in the majority of cases little or no effect is produced by drugs, yet, if the indications for their employment are carefully studied, they will now and then be of service.

*Ergot.* As a rule, I have found ergot of very little value in menorrhagia, and not infrequently its use has been followed by intense pain, undoubtedly due to its stimulating the uterine muscles to contract. The one exception to this statement is in case of fibroids during the time when they are advancing toward the interior, that is, changing from the interstitial to the submucous variety. When the tumor has once got within the cavity, and has become pedunculated, the ergot seems to lose its effect. It has also proven of use in cases of subinvolution. But when the trouble is seated in the mucous membrane, as in cases of hyperplastic endometritis, there is little benefit to be expected from its use. Of the preparations, I prefer a reliable fluid extract. If, as is sometimes the case, its prolonged use is followed by gastric symptoms, pills of ergotine may be substituted. The hypodermatic use of the drug is a last resort in cases of a large tumor where an operation is not advisable.

*Hamamelis.* Hamamelis, or witch-hazel, has been highly praised by some writers for its efficacy in checking profuse menstruation. It has been used alone, in

doses of fifteen to twenty drops of the fluid extract, or mixed with equal parts of ergot. In neither way has it seemed to have any special effect.

*Gallic acid.* Gallic or tannic acid, particularly the former, in doses of five to ten grains in a wafer or capsule every three or four hours have yielded good results. The cases in which they are especially useful are those where there is a great deal of passive congestion from some misplacement or inflammatory condition about the uterus.

The dilute mineral acids, particularly sulphuric, may also be tried where other measures fail.

*Hydrastis.* *Hydrastis Canadensis* is one of the most satisfactory and reliable drugs in the treatment of menorrhagia. It is particularly useful in those cases which depend upon slight inflammatory conditions of the mucous membrane, and in that very common class of cases of moderate menorrhagia where no anatomical change can be found to account for the increased flow. It may be given in doses of twenty to thirty minims of the fluid extract three times a day during the inter-menstrual period, or in the less severe cases only during the week preceding the flow.

*Iron.* The drug which is of value in the largest number of cases of profuse menstruation is, perhaps, strange to say, iron. *A priori* one would expect iron to increase the flow, and so it does in those cases where anæmia and debility are associated with amenorrhœa or scanty menstruation. But, as has been pointed out above, menorrhagia is not infrequently a symptom of debility, the atonic state of the uterus which results

from the generally depreciated state of the system favoring an increased menstrual flow. Sometimes we find other evidences of impaired nutrition preceding the menstrual aberrations, as disorders of digestion, loss of flesh and strength, neuralgias, or circulatory disturbances ; in other cases the first marked symptom of overtaxing the strength may be a profuse menstrual flow. In either case iron is indicated, but in the latter class the effect of a short course of ferruginous tonics is often surprising. The tincture of the chloride of iron is decidedly the best form of iron in these cases, and ten to fifteen drops given largely diluted three times a day after meals during a single inter-menstrual period will often be followed by a surprising diminution in the amount of the next menstrual flow.

There are other preparations of iron which may be substituted in cases of a milder type, which are more elegant, and not open to certain disadvantages which the tincture of the chloride possesses. Rabuteau's pills, the citrate of iron and quinine or Blancard's pills may be mentioned as examples of a class of remedies which the reader can add to as his experience suggests.

We occasionally meet with an analogous form of menorrhagia in nursing women, when the drain of lactation is poorly borne, and the monthly loss of blood is only another factor added to the strain she is already under. Some one of the various preparations of iron will often be of marked benefit in these cases.

Tincture of iodine in ten-drop doses largely diluted has also been recommended for menorrhagia.

*Sedatives.* There is a class of remedies, which,

while not properly hemostatics, yet deserve mention here. I refer to the sedatives, such as opium, chloral, cannabis Indica, valerian, and aromatics, of which viburnum may be taken as a sample. While these are perhaps oftener used for dysmenorrhœa, yet we not infrequently see cases where both excessive and painful menstruation are combined, and where the use of some sedative or antispasmodic is followed not only by the relief of the dysmenorrhœa, but also by a diminution in the amount of blood lost.

Worry and fright, exposure to cold and wet, and excessive coitus, while oftener causing scanty and delayed menstruation, may have the opposite result, and in such cases a full dose of opium or cannabis Indica will have a most happy effect in quieting the nervous system and at the same time checking the flow.

So much for drugs. Their sphere of action is limited, and they should be exclusively used only when there is some valid reason for abstaining from local treatment, or, as adjuvants, in connection with the direct treatment of the cause. If I have dwelt upon their indications rather at length, it has been because I am conscious that they have been neglected in favor of the more brilliant methods with speculum and applicator, and am sure that in the case of young girls a good deal of unnecessary treatment might have been avoided by their intelligent use. The results from their employment would be much more satisfactory if the indications were more carefully studied and the appropriate remedy for the particular abnormal condition were chosen.

*Local treatment.* We come now to the consideration of local treatment of menorrhagia. This resolves itself into two distinct aims: First, the modifying or checking the hemorrhage at the time; and, second, the treatment during the inter-menstrual period of the morbid condition which is the ultimate cause of the menorrhagia. The latter treatment is necessarily as diverse as the cause, and it is not our purpose here to enter into that in any detail. When we come later to speak of the different pathological conditions of which menorrhagia is a symptom we shall outline the treatment suitable for each.

Curettage for hyperplastic endometritis, packing for displacements with adhesions, and general antiphlogistic treatment for inflammatory conditions, will be described under their appropriate heads.

*Rest.* As a rule, it is not necessary to employ any active measures to check the flow in menorrhagia. Such general precautions as rest in bed, light diet, avoidance of constipation and some sedative treatment are all that is necessary. This very simple treatment is often, however, the very thing which the patient objects to, and which it is difficult to induce her to follow, and yet its careful observance would, in a large number of cases, prevent graver developments, and avert the necessity of severer measures. Absolute rest in bed for a day or two, or possibly three, when the flow is apt to be most profuse, will often, if begun early enough, check this morbid tendency to excessive flowing. This important rule cannot be too strongly insisted on by the family physician in the case

of young girls when the early years of menstrual life show a tendency to this trouble. Occasionally, however, it becomes imperative to do something more to check the flow. In such cases the course of treatment should be as follows :

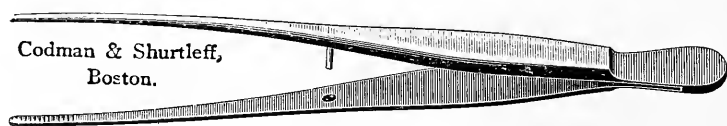
*Hot douches.* First, order hot-water injections, three times a day, specifying full six quarts, at a temperature of 115° F., with the patient in the recumbent position. This will sometimes modify the severity of the hemorrhage; but if they fail, then substitute small injections with some astringent. A good way is to add to the last quart of the full douche a tablespoonful of powdered alum. If the alum is not efficacious it is of little use to substitute other astringents. Tannin has the disadvantage of staining the linen.

*Vaginal tampon.* If these measures are of no avail, and the hemorrhage persists, systematic packing the vagina is the next thing to be done. Inasmuch as cases of uterine hemorrhage are usually emergency cases, it is wise to be provided with some suitable material for packing. It is true that on a pinch almost any soft material may be used, as cloth torn into strips, a roller bandage, old handkerchiefs or cotton-batting, but it is better to have just the right thing prepared and ready for use. The material that I have found best is the strip cotton described when speaking of the glycerine dressing (see p. 305). This may be torn into short lengths, folded over so as to form small pieces, perhaps an inch or more square, soaked in water and wrung out nearly dry. A little carbolic acid added to the water will keep them sweet until

used. A vial packed full of these small cotton tampons can always be carried in the instrument bag, and they are ready for use in an emergency.

It is important that the tampon in these cases should be firm. Only as the vagina is packed tightly and full can any effect be expected on the hemorrhage. To secure this end the clothing should be absolutely loose about the waist, the patient brought into Sims's position on a table, and using Sims's speculum, the tamponade be systematically and thoroughly made. All clots should be wiped out of the vagina, and then the pieces of cotton placed in position with the forceps (Fig. 144). Taking them up one

FIG. 144.



Vaginal Forceps.

by one, the posterior cul-de-sac should first be partly filled, then the lateral and anterior cul-de-sac, one piece being held in position by the beak of the speculum until the next is placed. The packing should be pressed against the sides of the vagina, and the vaginal vault raised as high as possible, the cervix being left free until the cotton has come down to a level with the external os. Then the whole vagina should be gradually filled, taking care in withdrawing the speculum not to engage its point, until the tampon has come down to just within the vulvar orifice. Sometimes, instead of the last few layers of pieces of cotton, a



large wad of dry cotton may be substituted, which will cause less pressure on the urethra. The patient should not be allowed to walk from the table to the bed, but should be carried, and should be kept as quiet on the back as possible, so as to avoid a recurrence of the hemorrhage.

*Removal of tampon.* This packing may be allowed to remain two days, provided there is no leaking; and some of the lower pieces may be taken out within twenty-four hours in order to relieve the bladder, if there is trouble in passing water. To remove the tampon it is not necessary to disturb the patient, and as it is in these cases often very undesirable that she should be moved, the following method should be employed: As she is lying on her back, she is directed to flex her knees. The thighs are then separated and covered each with a blanket, exposing only the vulva. The operator, sitting preferably on the right side of the bed, facing the patient, passes the left forefinger, well lubricated, into the vagina until it touches the lowest packing. A tampon extractor (Fig. 145), which is

FIG. 145.



CODMAN & SHURTLEFF, BOSTON.  
Tampon Extractor.

merely a double screw, is then carefully passed in on the finger and gently screwed into the lowest piece of cotton and then withdrawn. Care should be exercised not to scratch the patient with the extractor, nor in twisting to catch the hair. Piece after piece may be

thus removed without disturbing the patient in the least.

The measures which have been described for checking excessive flowing may usually be relied upon to do it temporarily, and are useful in an emergency. Very often, however, the flowing will return at the next menstrual epoch, so that it is fair to conclude that some condition of the interior of the uterus is keeping it up, and a thorough curetting of the uterine cavity, as described in the chapter on endometritis, should be tried.

In conclusion, it is only necessary to urge again the importance of not allowing a woman to flow from month to month so as to weaken her, when an examination may reveal at once the cause, and some simple treatment may entirely relieve her.

#### DYSMENORRHŒA.

THE last of the anomalies of menstruation is dysmenorrhœa, or painful menstruation. This, like all the others that have been spoken of, is merely symptomatic, but it is so often the only or chief complaint that it deserves special consideration.

There are certain difficulties met with at the outset, in judging of the pain connected with menstruation, which should be mentioned. In the first place, pain to a greater or less degree is so common at the time of the menses that it may be considered a normal accompaniment of the process. Certainly the absence of pain is so rare that it may justly be looked upon as an anomaly. The result of this is that the pain is not given its true significance, and is liable both to be

neglected on the part of the patient, and underestimated on the part of the physician.

Again, the inability on the part of the patient to intelligently describe and definitely locate pain in the pelvis, and the meagre observations and scanty mention in the text-books and medical literature generally of the significance of the different kinds of pains complained of, render the subject obscure.

There have, however, been certain forms of dysmenorrhœa described, and though some of them rest on a rather theoretical basis, and serve, perhaps, to cloak our ignorance, yet for practical purposes, especially as regards treatment, the division into several varieties may be maintained.

*Varieties of dysmenorrhœa.* The most common forms are the obstructive (under which head is also included the spasmodic), the congestive, and the ovarian or neuralgic. It is, of course, impossible to classify definitely under these heads all the cases of dysmenorrhœa we meet with. Our knowledge of the pathology of menstruation, of the changes which are present in the mucous membrane of the uterus, and of the relation of the nerve supply of the whole genital apparatus to the muscular structure of the uterus and to the circulatory changes, is too meagre to permit of accurate explanations. In the majority of cases, however, it is possible to gain from the history and examination of the case hints which may suggest a preponderance of one or the other causes, and lead us to try one or another mode of treatment.

*Character of pain.* Very great gain may be made

in this respect if our questioning about the pain is close and definite. It is not sufficient to know that there is pain, and that it is slight, or moderate, or severe. The exact time it appears, its duration, seat, and character, should all be very carefully investigated. In the first place, the patient should be questioned as to whether the pain comes on before, or with, or after the flow; if before, how long, whether it grows worse until the flow appears, if it then is relieved or aggravated, and how long it lasts after the flow begins. Its exact seat should be inquired into, special stress being laid upon the part where it is most severe, whether in the back, or lower abdomen, or groins, or whether it changes its situation from time to time. Its character is important, whether continuous or spasmodic, sharp and cutting, or dull and heavy, steady in one place or radiating, associated with any peculiarities in the flow, as worse when the flow is scanty, or the reverse, intense just preceding the appearance of a clot and then a period of relief, whether associated with nausea and faintness or not. If a series of such questions is asked, data may be obtained which will be of material help in justly estimating the cause.

*Obstructive dysmenorrhœa.* Of the different forms of dysmenorrhœa the first to be considered is the obstructive. Here the exudation of blood from the mucous membrane proceeds normally, but owing to some obstruction either in the canal or the uterus or in the vagina, usually the former, the blood fails to escape as it should, and collecting and sometimes coagulating, excites contractions which cause pain. In

these cases the pain usually comes on after the flow has started, is sharp and cramp-like, mostly confined to the lower abdomen, but occasionally very severe in the back at the level of the lower lumbar vertebræ, is intermittent in character, and at times very severe, resembling labor pains. Sometimes there is a clear history of pain accompanying the expulsion of a clot, followed by relief.

*Narrowing of os internum.* With a history of this kind we are led to suspect some obstruction to the free exit of blood. The most common cause of this is a narrowing of the canal of the uterus at the os internum, rarely at the os externum. Such narrowing is usually due to a thickening and rigidity of the tissues in the immediate neighborhood of the inner os, by which the calibre of the canal is encroached upon. This is a permanent change, and can be demonstrated during the inter-menstrual period by the passage of instruments. Sometimes, with the same series of symptoms, no such stenosis is found on examination, and the theory of a spasmodic contraction at this point has been advanced to explain the pain. *A priori* such a theory seems very plausible, and the success which has followed treatment applied in accordance with this view is also in its favor. Whether such spasmodic contraction does occur in these cases is difficult of demonstration; at least the natural repugnance to, and possible danger of examining during menstruation, which is the only time when the narrowing would be found, have naturally deterred observers from ascertaining the fact. The only investigations of the kind by Dr. Burton

have seemed to throw doubt upon its occurrence. He claims not only to have failed to find any narrowing of the canal, but to have found it even more pervious than in the inter-menstrual period.<sup>1</sup> This is probably due to the fact that as menstruation continues the uterine tissues generally become relaxed. A further explanation of this form of dysmenorrhœa will be found in the chapter on ante flexion.

In most of these cases there is excessive sensitiveness at the os internum. This sensitiveness is found on the simple passage of the probe. As the instrument passes the internal os there is an expression of pain on the part of the patient, and it is easy to see how this might be excited by the menstrual flow, especially since the uterus is then congested. This theory would make this form of dysmenorrhœa more nearly allied to the congestive.

*Uterine polyp.* Another cause for obstructive dysmenorrhœa is the presence of a small polyp situated near the os internum, which, acting like a valve, prevents the free flow of blood. An allied condition which is occasionally met with, and which is apt to be very obstinate, is a small fibroid, interstitial or submucous, situated either in the upper part of the neck or the lowest part of the body, which presumably swells during menstruation and hinders the free escape of the menstrual blood.

Retroversions and flexions of the uterus may cause in some cases dysmenorrhœa, but from the fact that such malpositions are usually of gradual development,

<sup>1</sup> Brit. Med. Journ., Sept. 27, 1884.

giving the tissues time to accommodate themselves to their new relations, and also because the curve of the canal, except in the most marked cases, is gradual, and the sound passes easily, I am inclined to the belief that the dysmenorrhœa, when present, is more often of the congestive type than obstructive. In acute flexion in a subinvolted or flabby uterus the size of the canal may be affected by the bend, but such cases are rare.

*Congestive dysmenorrhœa.* Congestive dysmenorrhœa is perhaps the most common form that we meet with. It is associated with so many morbid conditions of the pelvic viscera that to enumerate its causes would be to exhaust pretty well the list of diseases of the uterus and its appendages and surroundings. If, however, the general principles of the conditions which produce it are considered, it will be an easy matter to apply them in the particular case.

Menstruation, when normally performed, presupposes the following conditions: First, a stimulus starting from the ovaries, and affecting the mucous membrane of the uterus; second, normal circulation in the uterus; third, special changes in the mucous membrane lining the uterine cavity, which admit of the regular, painless escape of a normal amount of blood. If the first condition of normal menstruation is at fault we are apt to have the form of dysmenorrhœa known as neuralgic or ovarian. If the second and third conditions are not present we have the form now under consideration—the congestive.

*Active and passive congestion.* Anything which in-

terferes with the normal, free circulation of blood in the uterus may be a cause of pain at the time of menstruation. The organ becomes overcharged with blood, either because the influx is so active that the venous system is inadequate to carry it off—active congestion—or there is obstruction to the passage of the venous blood, and the organ becomes engorged from passive congestion. The first stage of chronic metritis, where the uterus is large, succulent and full of blood, is an example of the first condition; the later stage of the same disease, where the chronic inflammatory process has resulted in a formation of connective tissue with a consequent hardening of the whole organ and diminution in the calibre of the blood vessels, particularly the veins, is an example of the second condition.

*Pathological changes.* The most common pathological changes which are associated with congestive dysmenorrhœa are, first, inflammatory processes in the endometrium; second, changes in the tissues of the uterus, usually the result of parturition, beginning with subinvolution, and passing through the stage of chronic metritis to that of areolar hyperplasia; third, displacements; fourth, salpingitis, pelvic cellulitis and peritonitis. Not infrequently two or more of these causes are present.

As will be seen from the above enumeration, this form of dysmenorrhœa is more distinctly symptomatic than the other forms, and, as a natural result of this, our treatment must be almost exclusively applied to remedying the various pathological changes. In the



majority of cases the amount of the flow is not materially affected ; where it is changed, it is apt to be increased rather than diminished.

*Treatment.* Our treatment of the causal conditions is to be carried out during the inter-menstrual period, and the severity of the pain at the time of the flow must be controlled by the careful use of sedatives and such general measures as experience has found of use.

Rest in bed, for the first twelve or twenty-four hours, is of great importance where the pain is severe. Where that is possible, it should always be insisted on, and if faithfully carried out will sometimes obviate the necessity of drugs. The effect of rest may be aided by the use of hot applications to the lower part of the abdomen. A rubber bottle filled with hot water, or spongio-piline wrung out in hot water, and sprinkled with a few drops of spirits of turpentine, or, in severe cases, a large flaxseed poultice, will not infrequently have a very soothing effect.

Hot stimulating drinks are popularly supposed to make the flow easier and alleviate the pain. Gin is the most common remedy of this class, and probably does good by quickening the circulation generally, with perhaps a little more decided action upon the pelvic circulation.

Aromatics, such as ginger, red lavender and peppermint, have their advocates. Hayden's Viburnum Compound has seemed to be the most effectual remedy of this class, given in hourly teaspoonful doses in hot water for five or six times.

The milder measures are mentioned first because it

is by all means wisdom to avoid in these cases, if possible, the use of stronger sedatives and anodynes. Morphine should be used only in extreme cases and under the physician's supervision. The danger of forming the morphine habit is, to be sure, much less with a pain which occurs only once a month and lasts but a short time ; still, it is a consideration not to be overlooked. Especially is this true if the dysmenorrhœa has lasted for years, and local treatment directed toward the removal of the cause is neglected or refused. Under such circumstances it is better to vary the drug used, substituting cannabis Indica, or chloral, or Hoffmann's anodyne, or even inhalations of ether for the more dangerous opium. Dry cups over the lumbar regions or over the ovaries will often prove serviceable.

Never forget, however, that such dysmenorrhœa is, in the vast majority of cases, merely a symptom of some pathological change in the uterus or its appendages, and that our main efforts should be directed toward curing such disease. This should be plainly stated to the patient, and should be, as far as is possible, insisted upon as the only rational method of treatment.

*Ovarian or neuralgic dysmenorrhœa.* The third variety of dysmenorrhœa is the ovarian or neuralgic. This form is not so well marked pathologically as the others we have considered, for, in the majority of cases, it is not possible to discover by physical examination any changes in the ovaries to account for the pain. The microscope might possibly reveal

changes of structure, but our study of the pathology of the ovaries is still in its infancy.

*Symptoms.* The history of such cases is pain in the ovarian regions, usually coming on from one to three or four days before the expected catamenia; often relieved when once the flow is fairly established, and influenced, as regards the duration and severity, by the amount of the flow, being less marked and of shorter duration when the flow is rather profuse, and *vice versâ*. The pain is apt to be sharp and neuralgic in character, and to radiate from the groin up along the sides and particularly down the legs. It is more often on the left side than on the right, and if both sides are affected the left is apt to be worse. Headache and nausea are prominent accompanying symptoms. Pressure over the ovarian regions causes pain, and the patient is very apt to say that the affected side is swollen.

By making ovarian and neuralgic synonymous terms I do not mean to imply that all cases of dysmenorrhœa where the pain is of this character, and nothing wrong can be discovered with either uterus or ovaries, are distinctly ovarian. The uterus itself may be, as far as I know, the seat of neuralgic pain; and we certainly meet with cases where that organ is clearly the seat of most acute pain, and yet not the slightest cause can be discovered by our most careful bimanual and instrumental examination.

Still, as the majority of such cases are ovarian, I have thought it wiser not to differentiate too much for fear of confusing. This division, of course, includes

those cases where there are distinct changes in the ovaries which can be appreciated by the practised touch—changes in size, position and consistency, all of which may be causes of pain.

*Treatment.* Our treatment for these forms of dysmenorrhœa must be largely general. As neuralgias in different parts of the body are most frequently associated with debilitated anæmic conditions, and are most often relieved by general hygienic and tonic measures, so here we may expect the most from good food, out-of-door exercise, and ferruginous and other tonics. The one agent from which I should expect the most in the way of direct relief to the pain is electricity in the form of faradization or galvanism. Daily applications of a fairly strong faradic current through both ovaries to the back for from ten to fifteen minutes should be tried first. If relief does not follow, and especially if one or both ovaries are enlarged and prolapsed, one pole should be applied in the vagina, to the corresponding cul-de-sac, and the other to the abdomen, over the ovarian region.

Counter irritation with tincture of iodine, applied every night for a few times until it becomes painful, and then omitted until new skin has formed, or the application of dry cups, will sometimes relieve the pain. A mixture of chloral hydrate and gum camphor, equal parts, laid on with a single thickness of linen, has proved efficacious in a number of instances.

*Membranous dysmenorrhœa.* Membranous dysmenorrhœa has been classed as a separate form by many writers, but it seems to me to come properly under

the head of obstructive dysmenorrhœa, inasmuch as the pain seems from its character to be due to the efforts of the uterus to expel the membrane, which, having formed and become loosened, is to all intents and purposes a foreign body. It is a very rare affection, and the diagnosis should be considered doubtful until the microscopical examination of the supposed membrane has demonstrated the presence of the characteristic tissues and openings of the glands. Old blood clot will often simulate true membrane to the naked eye, and mistakes in diagnosis not infrequently occur from this cause.

The most prominent form of treatment will be local applications to the interior of the uterus, following out very nearly the rules to be laid down when speaking of endometritis. The application of the actual cautery to the mucous membrane lining the canal has been recommended.

*The menopause.* To complete the subject of this chapter a few words with reference to the menopause may not be out of place.

It is the popular opinion that the earlier the menstruation commences the earlier it will stop. This, however, is a fallacy. The rule is that the earlier the menstruation begins the longer it lasts, that is, the active sexual life which is measured by the menstrual life lasts longer at both ends, begins earlier and persists later. Poorly developed women who menstruate late, whose sexual activity is slight, who have, if married, none or few children, and who, if unmarried, grow prematurely old, illustrate this fact.

There are two main sources of trouble in connection with the menstruation at this time ; one is menorrhagia, and the other the nervous phenomena, which accompany the cessation of the function. The former, contrary to what is generally believed by the laity, is due to some definite lesion which may be treated with advantage. It is not enough to say when a woman is flowing profusely at the age, we will say, of forty-five to fifty, that it is the change of life, and that it is of no moment, that when she gets through with the change of life it will stop, and nothing need be done about it ; on the contrary, it is just such an excessive menstruation which should be looked upon with suspicion, and the woman should have the benefit of such treatment as is proper for the especial condition which is found. On examination some definite cause can usually be found for the excessive flowing, and a great deal of help may be given the patient to tide over this time of life, which, at the best, is an exceedingly unpleasant period for her. If for no other reason, the frequency with which malignant disease and tumors show themselves during the decade from forty to fifty would alone make it imperative to investigate these cases with reference to their cause. If all cases where irregularities of the menstruation appeared were seen early, were examined by the attending physician, or were referred for diagnosis to specialists, the large death rate from cancer would be materially lessened. There is no question that if such cases were seen early and a diagnosis made and the proper surgical treatment instituted that the records of complete cure following

the operation for cancer would show a very great improvement. It is not a simple thing for a woman to begin to flow irregularly, by which I mean flow too much and too often, at the time of the menopause. It may be so serious that every case should be looked upon with suspicion, and an examination should be urged to determine the actual cause, if it can be found out.

The second factor that is of importance at the menopause is the nervous condition of the patient. It may safely be said that there are very few women who do not show well-defined reflex and nervous phenomena in the years which constitute what is for them the change of life. Such phenomena vary very greatly in extent and in severity. In some they are exceedingly well marked, and very distressing. For many it may be little more than a slight lowering of the vitality which shows itself in what is commonly called nervousness. This may, however, be only the starting point of more serious nervous disturbances which may go on from bad to worse. Various functional disorders are very common accompaniments of this time of life, especially those relating to the circulation. The familiar "hot flashes," the sudden breaking out of the whole body into perspiration, the irregularities of the heart's action, and the very distressing head symptoms illustrate this fact.

It is important to bear in mind that a great deal can be done to relieve such patients of the mental and physical suffering that they undergo during the years of the climacteric.

The special methods of treatment to be employed will vary, of course, with the symptoms which predominate. Where the circulation seems to be probably at fault as evinced by headaches, flushings, palpitation of the heart and coldness of the extremities the method of depletion by means of the glycerine tampon will be found to be a most efficient remedy. So, too, where the menstruation becomes irregular, appearing at long intervals, and for weeks the patient feels as if nature were trying to bring on the flow—in those cases the depleting treatment which I spoke of will be found to be of especial value. The quieting of the nervous system by sedatives, the regulation of the mode of life, the combating of the mental depression which is very apt to be present by means of appropriate exercise and out-of-door life—all these methods used with skill and persistence will render this time of life, which women look forward to with so much dread, very much less serious.



## CHAPTER XV.

### DISEASES OF THE OVARIES.

THE affections of the ovaries which claim our consideration here are malpositions, acute and chronic inflammation, and neuralgia.

*Prolapse of the ovary.* The rules for the examination of the ovaries have been laid down in Chapter III. From that it will be seen that the normal ovary is not at all easily reached, unless the vagina and the abdominal walls are unusually relaxed. When displaced, however, it comes nearer the vagina and within reach of the examining finger. It is then usually felt as a rounded or oval body lying either laterally from the uterus in the lower border of the broad ligament, or more often behind, in Douglas's cul-de-sac. When felt in the latter position the uterus will, in the majority of cases, be found to be either retroverted or retroflexed. In this position the ovary, if enlarged, may be confounded with the retroflexed body of the uterus, and if careful bimanual examination fails to determine satisfactorily the position of the uterus the use of the probe is necessary. The absence of the ovary from its normal position will help to clear up the diagnosis. Pressure on the prolapsed ovary gives rise to a peculiar sickening pain, which may in some cases amount even to nausea. It may be movable or fixed. If the latter the probabilities are that there are

adhesions due to old inflammatory processes, and in proportion to their extent and firmness is the prognosis for a complete cure more unfavorable.

*Prolapse from relaxation.* The ovaries may become prolapsed in two ways: First, from relaxation of the natural supports. This most commonly occurs after parturition. As the uterus enlarges, the ovaries are drawn upward and the ovarian ligaments put on the stretch. If the natural process of involution of the uterus does not take place, we have subinvolution, a process which has been described in Chapter VIII. The same process may affect the attachments of the ovary, and, as a result, the ligament remains lengthened, and the enlarged ovary sags downward, usually toward Douglas's pouch.

We also find this displacement of the ovary in women who have never borne children, where the relaxation is a result of general muscular debility in which all the pelvic organs share. The vagina is relaxed and distensible, the uterus becomes easily displaced, usually ante- or retroverted and somewhat prolapsed, and one or both ovaries descend from loss of support.

*Prolapse from contraction of adhesions.* The second way in which the ovaries become displaced is by being drawn out of position by the formation of adhesions and their subsequent contraction. The displacement in these cases is not apt to be so great as in the preceding class, but the symptoms are more marked and the treatment more difficult. The ovary cannot be so easily isolated, but is often bound up in a mass com-

posed of the ovary, tube and inflammatory thickening of the neighboring cellular tissue. It is most often felt laterally from the womb, less often behind and occasionally in the very rare position in front of the uterus between it and the bladder.

*Symptoms.* The principal symptoms are pain in the ovarian regions, especially on walking or standing, pain on defecation, due to the pressure of the fæces on the displaced ovary, dyspareunia and, in some cases, reflex nervous symptoms.

*Treatment.* The proper treatment of this condition varies with the cause. If the organ is prolapsed from subinvolution the same principles of treatment which were laid down in treating of the similar condition of the uterus will apply here. The indications are two-fold—to reduce the size of the organ and to strengthen the ligaments. These results may be best attained by the use of applications, by massage and electricity.

*Applications.* Owing to the position of the ovary, applications to it cannot be so directly applied as to the uterus. If, however, they are thoroughly made to the part of the vagina nearest the displaced organ they undoubtedly do good. The most effectual is Churchill's tincture of iodine applied by means of a cotton-stick, with the aid of Sims's speculum. This should be done frequently—every other day if possible. A cotton dressing is placed in the vagina after the application and allowed to remain twenty-four hours.

Pain may be sometimes relieved by the use of ichthyol and glycerine applied on wool and allowed to remain two or three days.

*Massage.* Where there is not much sensitiveness, massage will sometimes be of benefit. This is accomplished by gently kneading or rubbing the tissues laterally from the uterus, between the finger in the vagina and the hand on the outside. The finger is passed up as high on the side of the uterus as possible, so as to include the whole of the broad ligament; it and the hand are then approximated, and the two are drawn downward, allowing the tissues to slip between them. This manœuvre is repeated several times every second day, and may be followed by an application of iodine.

*Electricity.* The well-known properties of the faradic current in stimulating muscular fibre would naturally suggest its use in these cases of prolapse of the ovary, and a limited experience with it has proved exceedingly satisfactory to the writer. Any simple battery may be used, as the current need not be strong. My method of application is as follows: I use a small dry-cell battery, and place one pole in the cul-de-sac corresponding to the displaced ovary, and the other over the region of the ovary on the abdomen. The sitting lasts from five to ten minutes, every other day, if possible, and the strength of the current is gradually increased until in some cases the full amount of the battery is employed. In addition to its stimulating effect upon the muscles the faradic current has also a marked sedative action, and in most cases considerable relief from pain follows its use.

*Pessaries.* In a certain number of cases something may be gained by supporting and raising the ovary by

a pessary. This can be only indirectly done, as the ovary itself is too far removed from the vagina to admit of direct pressure being brought to bear upon it. In the rare cases where it is displaced into Douglas's cul-de-sac without any retroversion or flexion of the uterus a bulb pessary may, by filling up the posterior pouch, raise the ovary somewhat and relieve symptoms. This can only be done when the organ is not very sensitive, and there should at all times be borne in mind the possibility of the ovary being caught between the pessary and the sacrum.

Where the ovary is drawn backward by the retroverted or flexed uterus, raising the womb by means of a proper support will sometimes replace the ovary. These are the most satisfactory cases to treat. It is occasionally necessary to hollow out the bulb of the pessary on the side corresponding to the prolapsed ovary to avoid pressure on it (Fig. 146). Where

FIG. 146.

CODMAN &amp; SHURTLEFF, BOSTON.



Bulb Pessary for Prolapsed Ovary.

the ovary is drawn out of its normal position as a result of inflammatory processes in the neighborhood, and is bound down by adhesions, the prognosis is more unfavorable. The treatment then is similar to that for

chronic peritonitis, of which affection this is indeed but a complication. Applications, packing and the use of galvanism hold out the most promise of relief, but in many cases the suffering is so great, and the state of invalidism so pronounced, that an operation for the removal of the uterine appendages is justifiable.

*Acute ovaritis.* Acute inflammation of the ovary is a rare affection. Its most common cause is septic infection following parturition, occasionally it is a result of gonorrhœa, very rarely of direct injury. It may also occur in the course of acute zymotic diseases.

It is often difficult in the acute stage to distinguish it from localized pelvic peritonitis, as the sensitiveness is too great to admit of a thorough examination. Exceptionally we can differentiate it from other inflammatory affections of the pelvic organs. In these cases we find an enlarged and exquisitely sensitive ovary, usually smooth but sometimes nodular, lying somewhat lower than normal, and somewhat movable. The pain is circumscribed, aggravated by walking or standing, and at times radiating down the corresponding thigh or up toward the breast. The left ovary is more often affected than the right.

The usual termination is in resolution or, more rarely, in the formation of an abscess. Where an abscess forms, the process may often become chronic. The whole ovary may be transformed into a single abscess, or there may be several small abscesses. There is usually fever with morning remissions, sweating, loss of appetite and emaciation—in fact, the well known symptoms of pus formation.

During the acute stage there should be no purely local treatment. The danger of setting up inflammation of the adjacent peritoneum or cellular tissue, or aggravating it if such exist, would contra-indicate any vaginal applications.

Absolute rest in bed, the application of iodine to the abdomen over the affected ovary or of leeches to relieve the pain, morphine if necessary (preferably in the form of suppositories), and stimulants, are the methods of treatment which will be most efficacious. Should an abscess form, laparotomy should be done and the ovary removed as a whole.

*Chronic ovaritis.* This affection does not often follow the acute form, but beginning insidiously, gradually develops until we find the structural changes characteristic of chronic inflammation of other organs. The ovary is at first larger, more engorged with blood, gradually shrinking as interstitial growth progresses, until in the final stages we have a small cirrhotic ovary which has entirely lost its functional activity.

Its most common cause is undoubtedly gonorrhœa, the inflammation extending from the endometrium and the tubes to the peritoneum and ovaries. In a small proportion of cases it follows the puerperal process without the acute stage intervening.

Pain over the affected side, increased by defecation and by walking or lifting, is the most common symptom. Dysmenorrhœa is usually present, and may be merely an aggravation of the usual pain, or there may be in addition severe backache and radiating pains in

the thigh and side corresponding to the affected ovary. If there is a coincident metritis or endometritis the flow is at first profuse, later scanty, and with the diminution in amount there is apt to be increased pain.

The diagnosis is often difficult on account of the great tenderness of the parts. It is probable that in the majority of cases of chronic ovaritis there is also some circumscribed peritonitis. Where the ovary can be isolated and palpated and is found to be enlarged, and the foregoing symptoms are present, we may safely assume that we have this condition to deal with. Where the sensitiveness is so great that the bimanual examination is unsatisfactory the diagnosis between chronic ovaritis and ovarian neuralgia can often be made only under ether.

The treatment is essentially that for all chronic affections occurring in the neighborhood of the uterus. Applications of iodine, both internally and externally, to relieve pain, glycerine dressings to reduce congestion, and galvanism are the principal remedies. The importance of rest, especially just before and during menstruation, cannot be too strongly insisted on. Of equal importance is the avoidance of all mental and physical fatigue, and the alternation of moderate exercise with periods of rest.

*Ovarian neuralgia.* There is very little to be said about this condition which has not practically been said in describing the other forms of ovarian disease which have been noticed in this chapter. We are forced to put in this class those cases of pain in the ovary where examination fails to discover any dis-



placement or enlargement. As our methods of examination become more perfected, and our knowledge of the pathology of ovarian disease more extended, the number of cases of this character will undoubtedly grow smaller.

The treatment does not materially differ from that for chronic ovaritis. In addition to the local treatment, especial attention should be paid to general tonic measures, inasmuch as in many of these cases the ovarian neuralgia seems to be only a manifestation of a general nervous debility.

The digestion should be aided when necessary, the bowels regulated, healthful exercise prescribed in moderation, and regular and restful sleep promoted by simple means. The use of opiates, both for this end and to control pain, should be studiously avoided, as the chronic nature of this trouble would very easily favor the formation of the opium habit. A great deal may be accomplished by inspiring a cheerful and hopeful disposition on the part of the patient, to which end the physician himself should cultivate his powers of treating the multifarious symptoms as they arise with promptness and variety of resource.

The attention to the *moral* of the patient is of the greatest importance in that class of cases where profound nervous symptoms are associated with, or possibly caused by, the ovarian trouble. These are the cases of hysteria, with hemi-anæsthesia or hysteropileptic attacks, which have been especially studied by Charcot. Their treatment comes more properly within the province of the neurologist.

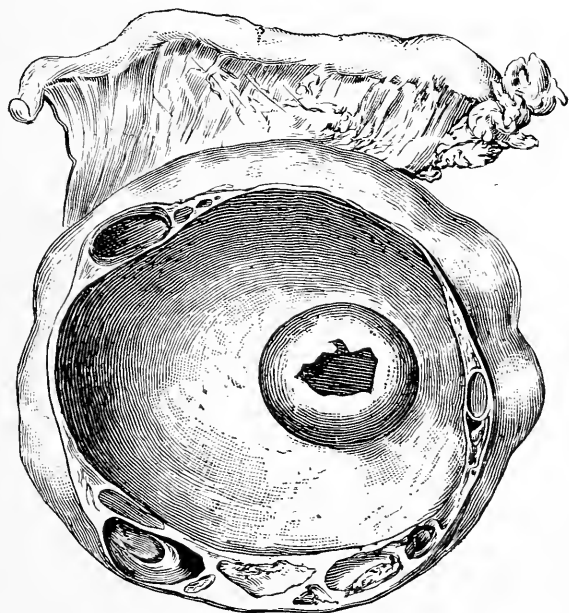
## CHAPTER XVI.

### TUMORS OF THE OVARY.

TUMORS of the ovary may be divided into cystic and solid. Cystic tumors are by far the most common. They may be of any size from that of a pea up to a cyst, filling and distending the abdomen, and containing many quarts of fluid. The most of them probably arise from the Graafian follicles and represent a form of degeneration. They start in the cortex of the ovary and develop outwards towards its free surface, at first confined to the side where they start, but later reaching the middle of the abdomen. There are many varieties of ovarian cysts. Where the cyst is single it is called a monocyst. Polycystic tumors may be the result either of the simultaneous development of several follicles forming a large multilocular tumor, or small cysts may develop from the wall of the parent cysts, constituting what is known as the glandular cystoma (Fig. 147). As the tumor grows, the partitions between the different cysts may become absorbed by pressure, a few large cysts only remaining. The contents of the cysts vary, but consist usually of a clear fluid of a light straw color. This is especially true of unilocular tumors. Sometimes the contents are of a thick jelly-like consistency, different portions of the same tumor varying in density. Sometimes the fluid is bloody, due to hemorrhage. Occasionally there is

cholesterin. A comparatively rare form of cyst is one where papillomatous growths start from the inner wall

FIG. 147.



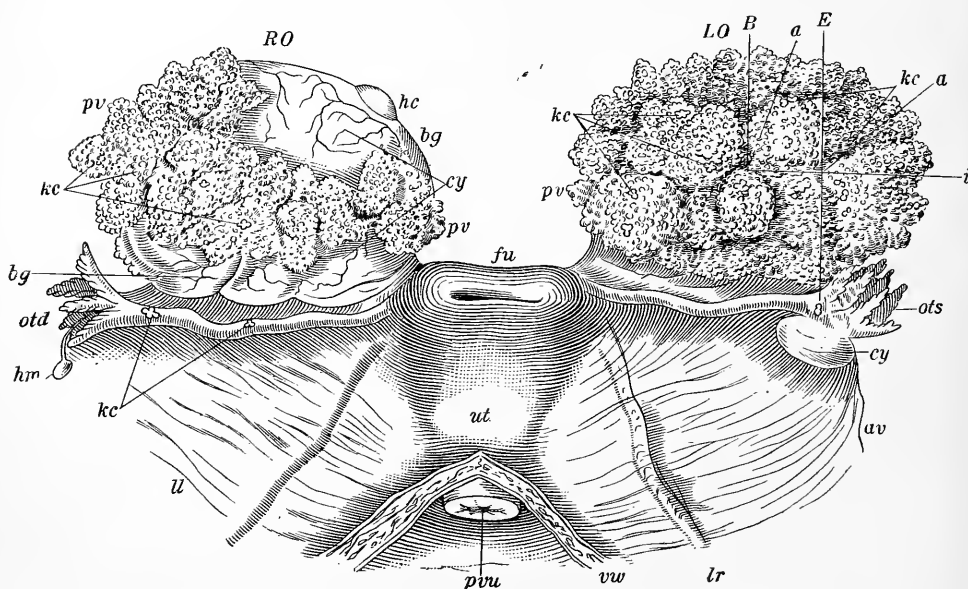
A Proliferating Glandular Cystoma of the Ovary, Slightly Reduced from the Natural Size (Doran).

and more or less completely fill its cavity. Sometimes these growths break through the cyst wall and develop not only on the outside of the cyst, but also on neighboring organs (Fig. 148).

The second variety of tumor to which the ovary is liable is dermoid. These may be said to occupy the border line between cystic and solid tumors inasmuch as their contents are frequently of both kinds. The lining membrane of this form of cyst resembles true skin, and as a result the contents are such substances

as enter into the composition of skin. Thus we find sebaceous and sudoriferous glands, hair, teeth, and even bodies resembling other organs, such as brain matter and bones. Fat and cholesterin are the two substances usually found in the fluid contents of a der-

FIG. 148.

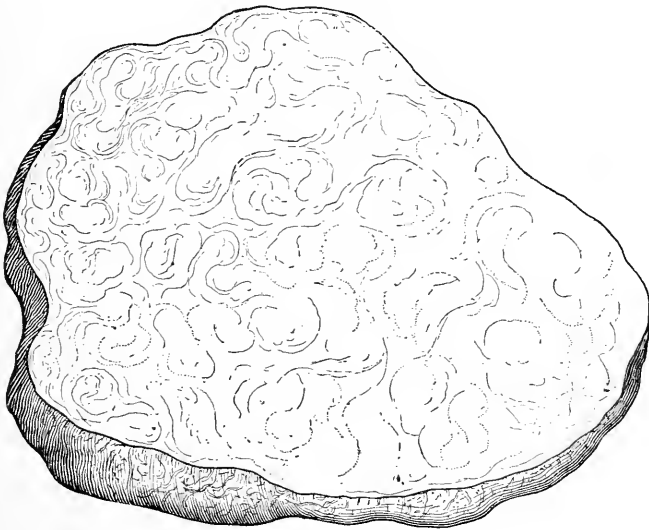


Superficial Papilloma Involving both Ovaries (front view) : *RO*, right ovary ; *LO*, left ovary ; *fu*, fundus uteri ; *hc*, hyaline cyst ; *pv*, papillary vegetations ; *cy*, cystic tumors ; *bg*, blood-vessels ; *hm*, hydatid of Morgagni ; *otd*, abdominal orifice of right tube ; *ots*, abdominal orifice of left tube ; *kc*, calcareous deposits : *ll*, broad ligament ; *lr*, round ligament ; *av*, ala vespertilionis ; *ut*, uterus ; *pvu*, vaginal portion of uterus ; *vw*, vaginal wall laid open (Coblentz).

moid cyst. These tumors are usually comparatively small and often occur before puberty, or at any rate in early life. The tubo-ovarian cyst is one composed of cysts which belong to both the tube and the ovary that

have grown intimately together, and the separating wall between has disappeared, leaving one cavity. Solid tumors of the ovary are comparatively rare. Occasionally we find a fibroid (Fig. 149), and exceptionally malignant disease, either carcinoma or sarcoma, may develop in this organ.

FIG. 149.



A Fibroma of the Ovary.

*Symptoms.* The symptoms of ovarian cysts in their early stages, are either entirely wanting or are obscure. They rarely give rise to symptoms until they have attained such a size that they cause trouble by pressure. There may be a feeling of weight and heaviness in the pelvis, backache, some difficulty of locomotion from pressure on the blood vessels, and possibly some slight interference with menstruation, but these symptoms cause so little annoyance that frequently the patient

is not aware of any trouble which leads her to seek advice until the abdomen begins to enlarge. They are usually fairly rapid in their development and if left to themselves completely fill the abdomen, displacing other organs, pressing out the lower ribs, and enlarging the abdomen to an enormous size. The presence of a large tumor has a detrimental effect upon the general health. It saps vitality, interferes with the functions of the different organs, and, if untreated, wears the patient out.

*Diagnosis.* In making a diagnosis of an ovarian tumor we begin with the abdomen. The clothing should be completely loosened and pushed up and down, so as to leave the abdomen perfectly free. On palpation with both hands, if a cyst is present we can usually feel the greater resistance to which it gives rise. It may, if small, be pushed from side to side, and its rounded contour defined. If both hands are placed upon the abdomen with the fingers pointing towards the pelvis, its origin from the pelvis may be made out. In the diagnosis of a large tumor which fills the abdomen percussion will afford us valuable aid. In making percussion over the tumor we find that it is dull over the upper part of the abdomen, and as we approach the flanks resonance begins. Fluctuation is a very important sign of a cyst. With one hand placed upon one side of the abdomen we give a quick stroke on the other, and the wave of fluctuation can be felt against the first hand. Sometimes in fat women a sensation of fluctuation is conveyed by the adipose tissue. To avoid this error the

hand of an assistant should be placed on the middle of the abdomen, thus cutting off the surface wave. The vaginal examination will also aid us. As a rule the uterus is crowded forwards and to one side. The vaginal vault bulges downward somewhat, or is elastic to pressure. The passage of the probe will reveal the normal-sized uterus displaced by the tumor, and thus aid in making a differential diagnosis from a fibroid.

There are several conditions from which an ovarian cyst must be differentiated. The abdomen may be enlarged as a result of ascites. In ascites, percussion will reveal dullness in the flanks, and resonance in the middle of the abdomen, as the intestines are floated up upon the ascitic fluid. It is just the reverse with an ovarian cyst. It is more difficult to distinguish an ovarian tumor from a large fibroid. A fibroid is usually much firmer in consistency, harder, possibly nodular, and more in the median line. The cervix is not displaced, the tumor is continuous with the cervix, and the probe will often demonstrate an increased depth of the cavity. Pregnancy should always be borne in mind, and the characteristic signs of this condition looked for. Where the tumor has attained considerable size so that it has become an abdominal tumor, the diagnosis is, as a rule, comparatively easy. While it is small, and is probably a pelvic tumor, the diagnosis is more difficult. We may have several conditions which would simulate a small ovarian cyst—a small fibroid, a pelvic abscess, an hæmatocele, and very frequently some tumor of the Fallopian tube, either pyo- or hydro-salpinx. The latter tumors are usually

recognized by more pain, by an elongated shape, closer connection with the uterus, by a greater degree of immobility, and by their slower growth.

*Complications.* There are various complications which may arise in the course of the development of this class of tumors.

The symptoms will be much earlier manifested if a cyst develops in an ovary which is bound down by adhesions. Here, instead of growing towards the abdominal cavity, it may be forced downwards, and develop between the layers of the broad ligaments. Such tumors are with difficulty diagnosticated from fibroids of the uterus, and, as has been said before, are often associated with severe hemorrhage. The attachment of the tumor or the pedicle may vary much in length. If the pedicle is long, the tumor is exposed to the danger of becoming twisted. As a result of this the blood supply is interfered with, and the tumor immediately gives rise to serious symptoms. Hemorrhage occurs in it, and if there is complete cutting off of the nutrition, it begins to slough and sets up acute peritonitis. Occasionally, either from accident, or as a result of too violent examination, an ovarian cyst will rupture, and its contents be poured out into the peritoneal cavity. As a rule, this does not give rise to serious symptoms, but usually the tumor refills.

*Prognosis.* If left alone, ovarian cysts grow until they threaten the life of the patient, and if unoperated cause death. They may, to be sure, for a long time develop slowly, but there is no prospect that a spontaneous cure will result.



*Treatment.* There is only one form of treatment applicable to these growths, viz., their removal by operation. This operation, which was formerly looked upon with much dread, is now one of the simplest and most certain operations that is performed in modern surgery. As soon as the presence of a tumor is known it should be removed. The smaller the growth, the better condition the patient is in, and the less of a shock it is to her system. Ovariectomy is the prototype of all abdominal operations, and I propose to describe in a good deal of detail the method of operating, and what I say here will apply to all abdominal operations.

The preparation of the patient should begin several days before operation. Care should be taken to see that the bowels act daily and freely, the urine examined to see that the kidneys are in good working order, and the diet should be simple and nutritious. On the morning of the day before operation, a cathartic should be given, preferably castor oil. After the oil the diet should be liquid. The patient should be given a bath, and the abdomen well scrubbed with soap and water, the pubic hair shaved, and a gauze dressing soaked in 1-5000 corrosive sublimate should be applied to be worn during the night. An enema should be given the morning of the operation. The room in which the operation is to be performed should, as far as possible, be bare of furniture and hangings, and should be chosen so that if possible a north light may be available. If uncarpeted the floor should be washed with corrosive sublimate. There should be sev-

eral pitchers of boiled water, both hot and cold, at hand, and one or two pitchers of corrosive sublimate, 1-2000. A table should be provided which will ad-

FIG. 150.



Patient in Trendelenburg Position.

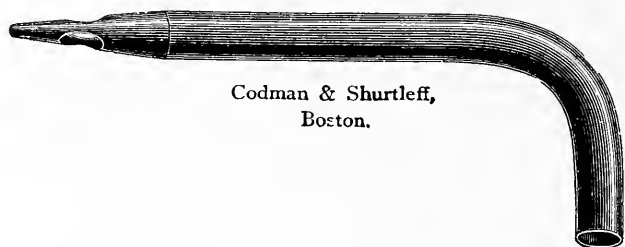
mit of placing the patient in the Trendelenburg position (Fig. 150). The sheets and towels should be sterilized either by baking or steaming, and everything that is used about the operation should be made abso-

lutely clean. The nurses and physicians should make their hands aseptic in the following way: Use hot water and soap with scrubbing brush for three minutes by the clock, use nail cleaner, scrub again in hot water for two minutes, then for a minute wash the hands thoroughly in absolute alcohol. The patient having been etherized, should be brought into the operating room, and covered with sterilized sheets. The abdominal bandage is then removed, and the abdomen washed with soap and water, and finally with ether or alcohol.

The incision is made in the median line between the pubes and the umbilicus, usually about three inches in length. The skin and subcutaneous fat are divided, next the fascia in the median line between the two recti muscles, when we come down upon the fat overlying the peritoneum; this may be lifted up with forceps on either side, and carefully divided until we come to the thin peritoneum; this is nicked carefully, and then the opening enlarged with scissors to the full extent of the external incision. This gives sufficient room for the insertion of two or three fingers with which the conditions that are present may be made out. If we have a large tumor, it will present through the opening that has been made. The fingers are slipped about to determine the presence of adhesions, carried down into the pelvis to note its relation to the uterus or appendages, and an exact diagnosis may thus be made. If we have a large cystic tumor to deal with without adhesions, a trocar (Fig. 151) to which rubber tubing is attached may be thrust into the

tumor and its contents evacuated. In the case of a non-adherent monocular cyst the whole tumor will

FIG. 151.



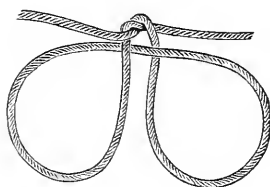
Lawson Tait's Trocar.

collapse, and may be drawn out through the small incision. If it is a multilocular cyst, and particularly if the contents vary in consistency, only a portion of the tumor can be evacuated in this way. When this occurs it is usually necessary to enlarge the abdominal incision somewhat in order to introduce the hand and to break up the adhesions between the different cysts. If there are adhesions present they can usually be separated with the fingers, using gentle traction, or, if very strong, they have to be tied off. Having delivered the tumor through the abdominal incision, we come to the pedicle. This varies very much in length and thickness in different tumors. Where it is small it may be tied off close to the uterus with a single ligature, preferably of braided silk, size No. 12. In order to prevent slipping, the pedicle should be transfixed and each half tied separately, with a third ligature around the whole to ensure against hemorrhage, or the Staffordshire knot (Fig. 152) may be used.

Where the pedicle is broad it may have to be tied off in sections. There is usually very little hemorrhage following this operation, and the abdominal cavity can be cleaned with ease, using only a few sponges.

The second ovary should always be examined to determine its condition, and where there are symptoms of beginning trouble, it should be removed at the same

FIG. 152.



The Staffordshire Knot.

time. Advantage may be taken of the abdomen being opened to perform suspensio uteri if the womb is retroverted, especially if it is adherent. The closing of the abdominal wound is an important part of the operation. It should be carefully done in order to prevent hernia. Where the abdominal walls are thin, sutures may be passed through the tissues *en masse*, care being taken to draw out the fascia so that it will be included in the ligature. These sutures should be placed at about half an inch apart. In very fat subjects it is a wise precaution to suture the fascia separately with buried sutures. These may be placed at short intervals throughout the whole incision, and the abdominal wound closed with other sutures which are passed through the whole thickness as described before. For use in the abdominal cavity, either for tying off adhesions, or tying a pedicle, I prefer braided silk. Catgut may be used if it can be rendered thoroughly aseptic. For the through and through sutures of the abdominal wound I prefer silkworm gut, and for the buried ones which unite the fascia, fine silk.

In my experience the best way to treat the abdominal wound is with a gauze dressing wet with corrosive sublimate, 1-2000, a layer being placed on either side of the stitches, and another over the middle which should stretch well beyond the limits of the incision. This is covered with dry gauze, a layer of wool wadding and a swathe firmly pinned. The patient is then put back to bed. Should there be symptoms of shock an enema of normal salt solution should be administered, or a pint of the same inserted into the cellular tissue under the breast. Where the heart's action is weak from shock, not from hemorrhage, the patient should be stimulated; a sixtieth of a grain of strychnia may be given hypodermically, and the foot of the bed raised. She should take nothing by mouth until all vomiting has ceased. A few sips of hot water should be tried first, to be followed by hot milk and water in teaspoonful quantities at frequent intervals, increasing the quantity and diminishing the frequency as the stomach retains it. If possible, morphine should be avoided, but if the pain is very severe it may be given hypodermically in small quantities. Thirst may be relieved by enemas of a salt solution. On the second day calomel should be given in quarter-grain doses every hour until two grains have been given, to be followed the next morning by an enema. If this results in a satisfactory movement, the bowels may be regulated every day afterwards by a laxative pill or saline, and an enema. If the calomel does not give good results, sulphate of magnesia should be given in drachm doses three or four times in quick succession. After

the second day the diet may be gradually increased until solid food is taken. The abdominal dressing should be renewed every second day, and if there is any appearance of redness about the stitches it should be done every day. This will do more to prevent stitch abscesses than anything else. The sutures may be removed anywhere from the tenth to the fourteenth day, and the patient allowed to sit up at the beginning of the third week. A proper fitting bandage should be provided before she is allowed to walk, and convalescence is usually completed in about three weeks.

## CHAPTER XVII.

### DISEASES OF THE FALLOPIAN TUBES.

THE Fallopian tubes, or oviducts, start from the upper angles of the uterus and run outwards, and backwards, and downwards, towards the posterior surface of the broad ligaments; they are thinner at the uterine end, and measure from three to five inches in length. They are composed of three layers of tissue: the mucous lining, which is covered with ciliated columnar epithelium; outside of this the muscular coat, and outside of this the serous membrane. At its abdominal end it spreads out into the form of fringes, the so-called fimbriated extremity, and one of the fimbriæ is attached to the ovary. Both the openings, the uterine and the abdominal, are exceedingly small, while the canal at its middle and outer portion is somewhat larger, and is called the ampulla. These tubes serve to convey the ovum from the ovary to the uterus.

Inflammation of the Fallopian tubes is called salpingitis. Salpingitis may be either acute or chronic.

*Acute salpingitis.* In the acute form it is seldom primary, but usually secondary to some acute inflammation of either vagina or uterus, and the tube is affected by an extension of the inflammation through the genital tract. It is characterized by a hyperæmia and swelling of the mucous membrane, and hypersecretion. This process is, in the milder cases, confined to the mucous



membrane itself; in more severe cases it affects the muscular layer, and may extend through to the serous covering, starting up a localized peritonitis. The most common cause of acute salpingitis is gonorrhœa, but it may follow any cause of septic infection. Thus the passage of an unclean instrument into the uterus may set up acute inflammation of the tube, so, too, the use of tents in minor operations on the uterus without proper antiseptic precautions, exceptionally trauma, or possibly intense local congestion from taking cold, or an acute suppression of the menses. The symptoms are rather vague, and, as a rule, do not differ from those which characterize any acute pelvic inflammation. They are often masked by the original disease, such as endometritis. There is apt to be a little fever. Pain is acute, located on the affected side, or, if both tubes are affected, it is pretty generally felt over the whole lower abdomen. The pain is acute, sharp or lancinating, and may sometimes be colicky in character. It is aggravated by motion or jarring, and there is usually tenderness on pressure. In early stages there is apt to be an increased amount of leucorrhœa which is rather thin and purulent in character, and may be intermittent, due to temporary occlusion of the uterine end of the tube, which later opens and permits an escape of the discharge. On bimanual examination the sensitiveness prevents a very accurate diagnosis being made, but what can be made out is usually a thickening of the affected side, but, owing to the pain caused by pressure, no distinct tumor can be felt. It is, therefore, generally impossible to differentiate salpingitis in the

acute stage from acute ovaritis, from beginning pelvic peritonitis or even ovarian neuralgia.

The treatment of acute salpingitis is such as is applicable to all acute affections of the pelvis, and will be more fully described when treating of pelvic peritonitis.

*Chronic salpingitis.* The symptoms of chronic salpingitis sometimes follow the acute form, but are very often not preceded by an acute stage. It may develop

FIG. 153.



Large Pyo-salpinx (Cleveland).

slowly without marked symptoms, and, by the time it is recognized, is distinctly chronic in its manifestations. There are the same pathological changes as occur in the acute form, but they occur more gradually. If it is confined to the mucous membrane, we have what is known as catarrhal salpingitis; if it extends to the muscular coat, this becomes thickened by the new

connective tissue, and we have interstitial salpingitis. There is increased secretion from the lining membrane of the tube, and if the uterine end remains open the discharge will find its way into the uterus and so into the vagina. There is a tendency, however, for the openings into the tube, both the uterine and the abdominal, to become closed by adhesive inflammation. When this happens the secretions collect in the tube and form a tumor known as pyo-salpinx (Fig. 153). If, as occasionally happens, the secretions are serous the tumor then becomes a hydro-salpinx. These enlarged tubes may develop to considerable size. They are sausage-shaped bodies divided more or less into sections by partitions. They are sometimes as large as the fist.

*Symptoms.* The symptoms of chronic salpingitis, while not severe, are decidedly annoying and detrimental to the general health. There is usually a good deal of pain which, though not very acute, is distressing and wearing to the patient. It is particularly felt on exercise, so that moving about is difficult and uncomfortable. It is felt low down on the affected side and walking or standing is particularly aggravating. It is apt to be more severe preceding the menstruation and is sometimes relieved at the onset of the flow. Menstruation itself is apt to be more painful and sometimes more profuse. The general health is affected, particularly the nervous system, and the patient runs great risk of becoming a chronic invalid.

*Diagnosis.* On examination we are usually able to make out on the affected side an elongated body which

is sensitive to pressure. It is attached to the upper angle of the uterus, and in favorable subjects can be followed outwards towards the wall of the pelvis. It differs from an ovarian cyst in its shape, and in its greater sensitiveness ; from extra-uterine pregnancy by the absence of other signs of pregnancy and its more clearly defined shape. A pelvic abscess is usually situated lower down, is more indefinite in its outline, and in the later stages there is distinct fluctuation.

*Treatment.* The method of treatment of chronic salpingitis will depend upon the anatomical condition of the tubes. If we have merely a catarrhal condition of the tubes, if the opening has not been occluded, and drainage is good, simple local measures may be tried. Usually these consist in applications of iodine to the vaginal vault, depletion with glycerine tampons, rest in bed before and during the menstrual period, the regulation of exercise so as to avoid overfatigue of the parts, and hygienic measures to build up the general health. These measures are, of course, a very indirect way of reaching the trouble, but they will oftentimes make the patient comfortable, and give the inflammation time to subside. Inasmuch as many of these cases start with an endometritis, and are kept up by it, a good effect may sometimes be produced upon the tubal disease by thoroughly curetting the uterus. This curetting may have to be repeated two or three times, at intervals of a few months, before a final cure. The pain may sometimes be relieved by the use of ichthyol and glycerine (1 part to 12) on wool tampons. If the disease has advanced beyond the catarrhal stage,

and the other coats of the tube are affected, particularly, as is often the case, if adhesions have formed between the tube and neighboring organs, and if we have either pyo- or hydro-salpinx present, or, as may happen, all these conditions together, the removal of the tube is indicated. The operation has been described under the head of Ovariectomy. The removal of the tube does not materially differ from that described there. There are more apt to be adhesions, and these should be separated with great care so as to avoid rupturing the elongated tube. Should this accident happen, the rest of the peritoneal cavity should be walled off as completely as possible with gauze and the contents of the tube carefully swabbed out. If only one appendage is diseased, the other may be left, provided the woman is in the child-bearing period and desires children. It should be borne in mind, however, that there is a tendency to the lighting up of the disease in the sound tube, which may necessitate a second operation.

## CHAPTER XVIII.

### PELVIC PERITONITIS.

INFLAMMATION of the pelvic peritoneum is very frequent. Its relation to the organs over which it is spread, particularly the fact that the Fallopian tube opens directly into it, thus affording a connection between a canal lined with mucous membrane, and a serous cavity, makes its infection a comparatively easy matter. Pelvic peritonitis is a localized affection, and is confined to that part of the peritoneum which covers the pelvic organs. It almost never shows any tendency to become general. The course of the disease in this locality does not differ from that which is characteristic of serous membranes generally. We have a stage of congestion followed by serous effusion, and later the exudation of plastic material which either becomes organized, or breaks down and forms an abscess. These various stages occupy considerable time in their termination and course. As a rule the termination is a fibrinous exudation, organized and gluing the different organs of the pelvis together. One attack predisposes to another, and it is very common to get a history of several attacks in quick succession.

*Causes.* There are several ways in which the peritoneum may become affected. The first is by the direct extension of the inflammatory process from the

lining membrane of the uterus, Fallopian tubes, or the ovary itself, through the intervening tissues to the overlying peritoneum. A second mode of infection is by the escape of an irritating fluid from the tubes. This may be the contents of inflamed tubes, especially the result of gonorrhœal infection transmitted from vagina or uterus, or in rare cases of fluids injected into the uterus, and forced through the tubes by the contractions of the womb. Other causes are sudden stoppage of menstruation, venereal excesses, cold, and very commonly unskillful instrumentation, especially if antiseptic precautions are not observed. Minor operations on the pelvic organs, such as dilatation, curetting, or the use of tents, if not done aseptically, or if the patient is allowed to move about too freely afterward, are liable to be followed by a septic peritonitis. Even the adjustment and wearing of an ill-fitting pessary is sometimes followed by this serious result. While, in the light of modern researches in bacteriology, it is probable that most cases of pelvic peritonitis are of septic origin, yet it seems to be a fact that traumatism, without the possibility of the entrance of germs, is the exciting cause in some cases.

*Symptoms.* The symptoms make their appearance suddenly and with considerable severity. Usually the first thing to be noticed is pain in the lower part of the abdomen. This may be preceded by a chill, or the chill may be absent. Fever usually makes its appearance very quickly, and the pain increases in severity. There is usually tympanites, and the patient seeks relief by drawing up the legs. There is some-

times vomiting ; very often vesical or rectal tenesmus. The pain is exceedingly sharp in character, and affected by movement of body or intestines. The fever increases rapidly, so that within a day or two it is very apt to reach  $103^{\circ}$  or  $104^{\circ}$ . The morning remissions are slight. There is rarely delirium, but apt to be a great deal of nervous apprehension. In a few days the acute pain lessens, but there remain considerable soreness and tenderness of the abdomen. The rise of temperature in these cases is not always proportionate to the frequency of the pulse. Where the disproportion is marked, so that we have a great deal of pain, with very quick, thready pulse, but comparatively little rise of temperature, the case is to be considered serious.

If resolution occurs, there is a gradual subsidence of the acute symptoms, and a slow return to health, though there usually remains, to remind the patient of what she has been through, some loss of strength, or inability to take wonted exercise, or chronic pain in the pelvis, usually associated with some disorder of menstruation.

*Diagnosis in the acute stage.* In the acute stage we have to depend more upon the rational signs than upon the vaginal examination for our diagnosis. The tenderness of the uterus and adjacent parts, and of the whole abdomen, is so great as to preclude the possibility of learning much from the bimanual examination. It is almost impossible in the earlier stages to distinguish between pelvic peritonitis and other acute inflammatory affections of the pelvic organs. The physical exami-



nation shows there is increased heat of the vagina. As the finger reaches the cervix there is usually found such marked sensitiveness that the slightest touch causes extreme pain. The attempt to palpate the uterus bimanually usually fails on account of the pain caused. The uterus is found to be less freely movable than usual, the cul-de-sacs somewhat obliterated, and a sense of boggy resistance to be felt, usually more pronounced at one side than the other. When peritonitis alone is present, the sensitiveness is more apt to be general, and there is less of a defined tumor to be felt; whereas, in cellulitis the increased fulness is apt to be confined to one side, and there may be considerable bulging of the cul-de-sac of that side.

*In the chronic stage.* As the disease assumes a more chronic form we find the exudations growing harder, and if they attain any size we can palpate them through the abdomen. Their exact position and character can be clearly made out only by vaginal exploration. If the process of absorption goes on they become smaller and harder, and in rare cases may disappear altogether. Usually, however, there remain slight thickenings, which the practised touch can recognize.

Chronic pelvic peritonitis usually results in the formation of adhesions between the different organs of the pelvis. In this way the various structures become matted together without making a mass of any considerable size. The bimanual examination shows diminished mobility of the uterus, and indefinite thickenings at both sides of that organ, from which the tubes and ovaries cannot be isolated. If the process

is mainly limited to the peritoneal fold of Douglas's pouch we find the uterus drawn back into a position of retroversion or flexion.

Occasionally we find the following condition of things: As soon as the acute inflammation has sufficiently subsided to permit of a thorough vaginal examination, we find the uterus perfectly immovable, and surrounded by an exudation which is as hard as a board. As has frequently been said, it suggests plaster-of-Paris having been poured in around the uterus, and allowed to set. A similar mass of exudation is thrown out over the whole surface of the uterus, so that it is symmetrically enlarged. Subsequent layers may be deposited at intervals, without the reappearance of any acute symptoms, until in well-marked cases the uterus may equal in size that of the last months of pregnancy.

*Remote results of chronic pelvic peritonitis.* Where the process of absorption has gone on as far as it will, and there is nothing left but what may be called the cicatrix, the changes found by the vaginal examination are very meagre. Only the practised touch can detect the slight abnormal thickening, and the difficulty is to connect the pathological change with the symptoms. These latter are out of all proportion to the former. In addition to the direct effects of the exudation, in the way of pain and loss of mobility, there may follow, as a result of the interference to the circulation of the uterus, irregularities of menstruation, endometritis and subinvolution, and disturbances of function of bladder and rectum, and later, especially in women of a ner-

vous temperament, general nervous phenomena, which may vary in severity from nervous debility to nervous prostration. For this reason these comparatively slight affections assume an importance which the anatomical changes alone would not entitle them to.

*Treatment.* The treatment of pelvic peritonitis in its acute stage consists in measures to relieve the pain and to limit the process as much as possible. To accomplish these results there is nothing that can take the place of opium. The pain is so severe that it imperatively demands relief by this drug, and its use also indirectly tends to shorten and limit the process by keeping the intestines absolutely quiet. We, therefore, give morphine, preferably hypodermically, to the point of toleration on the part of the patient, or until she is comfortable. It can be given in large doses if there is a good deal of pain, provided the patient's respiration is carefully watched so as to guard against narcotism. For a few days the bowels should be kept absolutely quiet by this means, and for that length of time, as a rule, the opium will have to be administered. Applications to the abdomen may, or may not, afford relief. Where there is extreme sensitiveness nothing can be borne, not even the weight of the bed clothing. This is often the case in the beginning of the disease; soon, however, as a rule, hot fomentations to the abdomen will be well borne and of value. The objects to be attained are those which are sought in the treatment of inflammation generally, viz., heat and moisture. That form of application which will secure those conditions with the least weight will be

best tolerated. Perhaps the most satisfactory way is to use flannel wrung out in very hot water laid over the abdomen, and covered either with oiled silk or sheet rubber. Spongio-piline answers very well for this purpose. The nourishment should be liquid and very simple. For the first few days the patient should be disturbed as little as possible. After the very acute stage has passed, hot vaginal injections will sometimes afford relief. All active local treatment should be avoided for a long time. There is probably very little that can be done to avoid later effects in the way of adhesions. These depend absolutely upon the greater or less extent of the disease, and are the one thing which in later stages will call for treatment. While not actively inflamed the various organs are apt to be more or less displaced by the contractions of the adhesions, and as a result there is a great deal of sensitiveness. This can be helped somewhat by applications of iodine to the vault of the vagina, by glycerine tampons, or by the use of tampons containing a mixture of ichthyol and glycerine—I part to 12. No active massage or attempts at replacing the organs should be made at this time. In the case of a very large exudation covering the uterus, blisters may be used on the abdomen. A blister two inches square is applied to one side of the lower abdomen; this is then dressed until it has healed, when a second may be applied on the opposite side. This is repeated several times. This measure will sometimes cause quite rapid absorption of the products of the inflammation.

The treatment of the displacements of the several

organs, particularly of the uterus, which remain as a remote result of pelvic peritonitis, has been spoken of under the head of Displacements with Adhesions. It is well to be conservative as to the operative treatment of these adhesions. If a laparotomy is done, and the adhesions are broken up, it is a matter of a good deal of difficulty to prevent their reforming. This tendency to inflammation with adhesions has been called chronic adhesive peritonitis.

In the more chronic forms a great deal can be done by regulating the patient's mode of life, avoiding a recurrence by care in the matter of exercise, quiet at the time of the menstrual period, abstinence from coitus, and building up the system with tonics.

## CHAPTER XIX.

### PELVIC CELLULITIS. PELVIC HÆMATOCELE.

*Pelvic cellulitis.* Pelvic cellulitis, as its name implies, is an inflammation of the cellular tissue. There is, contrary to what has sometimes been taught, a considerable amount of cellular tissue between the layers of the broad ligaments, and surrounding the cervix uteri. This cellular tissue is subject to the same laws in regard to inflammation as cellular tissue in other parts of the body. As a rule, the inflammation goes on to abscess formation, so that we have a pelvic abscess to deal with. The most common cause of pelvic cellulitis is septic infection following an abortion or childbirth. The tissues are apt to be bruised at that time, and, therefore, presumably less resistant than under ordinary circumstances, so that the conditions are favorable for the development of septic material, and the infection is probably carried along the lymph vessels into surrounding connective tissue. It may also follow slight operative procedures, the use of instruments inside the uterus, the use of tents or of pessaries.

*Symptoms.* The symptoms in the beginning of the affection are so much like those of pelvic peritonitis that a differential diagnosis between the two is not always possible at this stage. There is the intense pain in the lower part of the abdomen, chill, fever, possibly

rectal and vesical tenesmus, and usually some tympanites.

In cellulitis the pain is apt to be lower and confined to one side, the fever does not usually run so high, and the morning remissions are greater. There is usually more tympanites in peritonitis.

In the majority of cases the attack passes off by resolution, leaving as a reminder some sensitiveness at the place of the original inflammation, pain on exercise, a feeling of weight in the pelvis, and sometimes inflammatory thickenings which can be appreciated by the touch.

If the acute stage does not go on to resolution, and more or less complete absorption, we find after a partial subsidence of the severe symptoms the evidences of the formation of pus. These consist in localized pain, especially on motion, absence of appetite, coated tongue, and, especially, the occurrence every afternoon of hectic with fever. The morning temperature is at most elevated only a degree or two, and may, indeed, be normal, while the evening shows a regular rise of from one to three degrees. There are apt to be chills, or at least chilly sensations, occurring at irregular intervals, and on the subsidence of the fever profuse perspiration. These symptoms point to the formation of pus, and demand special treatment.

*Vaginal examination.* In the acute stage there is so much tenderness that very little can be learned by bimanual examination. Later, when the acuteness of the symptoms has subsided, we find a thickening and fulness, confined to one side of the uterus usually,

though, very exceptionally, it may be behind in Douglas's cul-de-sac, or even in front between uterus and bladder. The uterus is usually pushed over to the opposite side from the one affected. Later, when contraction has occurred, it may be drawn toward the side which has been the seat of the trouble, and we have a latero-version or flexion. Where pus forms, if the portion which breaks down attains any size, a peculiar softening of the mass at one point or another, with a gradual increase in bulk of the whole exudation, denotes this change.

On examination we find the uterus displaced laterally if the tumor is moderate sized. If large it is pressed against the pubic arch, and a bulging tumor is felt presenting in the posterior cul-de-sac. Fluctuation cannot usually be demonstrated owing to the impossibility of getting at both sides of the tumor, but a softening at some point may be detected which is characteristic of fluid contained in a cavity.

*Treatment.* In acute pelvic cellulitis we have as a rule less pain than in peritonitis, and the indication for large doses of morphine is not so urgent; absolute rest should, of course, be enjoined, and quinine or antipyrine, or phenacetine given to modify the fever if very high. Soothing applications to the abdomen will be found of great comfort to the patient. Usually the tenderness is not so great but that the hot-water douche can be borne; several large injections of six or eight quarts should be given daily.

As regards general treatment, the diet should be at first milk or gruel, alternating with beef-tea; later,

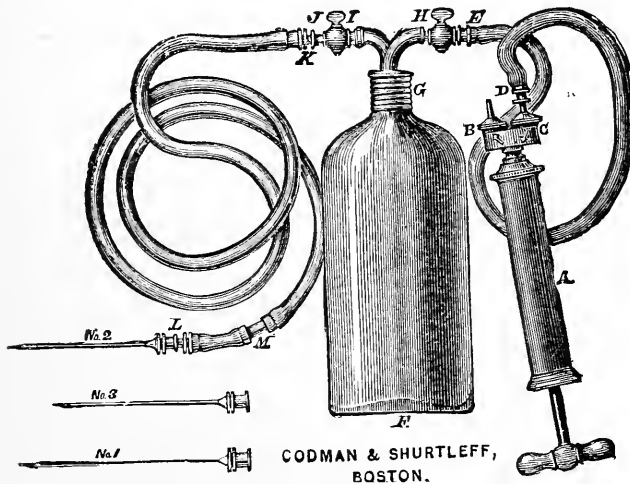


broths and soups. The strength should be kept up by means of brandy or champagne.

If after the acute symptoms have passed there are still high temperature and rigors, and it is evident that pus is forming, general supporting and stimulating treatment is necessary, and as soon as fluctuation can be made out, surgical interference to evacuate it.

If left to itself the abscess will usually discharge spontaneously. The place where it most frequently

FIG. 154.



Aspirator.

opens is the vagina, next in order is the rectum, then the bladder or the abdominal wall. It is, of course, wise to forestall this spontaneous opening at as early a stage as the diagnosis is clearly established. When it does open spontaneously its future course will be markedly modified by the character of the opening. If it occurs at the most dependent point, so that free

drainage can be established, the abscess will drain and contract and gradually disappear, and in the course of a few weeks the patient is well. Sometimes the opening is not so favorably situated, and in this case the process drags out for many months. As soon as the presence of pus is demonstrated it is wise to open the abscess, and drain it through the vagina. Under ether the genitals are thoroughly scrubbed and with the patient on the back a careful examination of the tumor is made to determine where the abscess wall is thinnest. At this point the needle of an (Fig. 154) aspirator is pushed through, and the presence or absence of pus thus demonstrated. If pus flows into the receiver the opening is enlarged by the knife or scissors, and the abscess allowed to drain thoroughly. The finger should be passed into the abscess cavity in order to break up any partitions there may be between other small adjacent abscesses. It is well to cauterize the edges of the opening to prevent its closing. If the abscess is small it may be left to itself to drain. If there is a large cavity, it may be well to insert a drainage tube. It should be washed out from time to time, and the drainage tube gradually removed as the abscess wall contracts.

#### PELVIC HÆMATOCELE.

By pelvic hæmatocele is meant a circumscribed collection of blood in the pelvis. This may be intraperitoneal or subperitoneal. In the intraperitoneal form the blood is poured out free into the peritoneal cavity, and later becomes walled off by a limiting membrane

which separates it from the intestines. The sub-peritoneal variety occurs in the cellular tissue beneath the peritoneum. This, owing to the lack of space, is naturally very much smaller than the intraperitoneal form. The most common cause is extra-uterine pregnancy. When the pregnancy has advanced from six weeks to two months and a-half, there is frequently a rupture either of the blood vessels on the outside, or of the tube itself, and we have a free hemorrhage. If this hemorrhage, as it often happens, is profuse, we shall have too great an amount of blood to be walled off. When, however, the hemorrhage occurs slowly, and possibly at short intervals of time, it becomes encapsulated. In many of these cases the ovum escapes and dies, and the blood becomes absorbed. Should the rupture, as happens more rarely, occur in the broad ligament itself, we have the subperitoneal variety. Hæmatocele may also be caused by the rupture of vessels in the ovary or in the broad ligament. There may also be a reflux from the uterus through the tubes into the peritoneal cavity. These cases are apt to be associated with a condition of chronic congestion of the pelvic organs, and possibly with some change in the character of the blood. Under these circumstances a slight cause, such as strain, shock or sudden chill, followed by stoppage of the menses, will suffice to produce this lesion. When there is a hemorrhage of any amount, there is an acute pain in the pelvis, a feeling of faintness, sometimes vomiting, a weak or thready pulse, blanched and anxious countenance, and gasping or sighing for breath. When the hemorrhage ceases, the

patient rallies from this condition, and as a result of the presence of blood in the peritoneal cavity, there is set up a localized peritonitis which walls the blood off.

This is accompanied by fever of short duration. When the fever subsides there remains merely the blood tumor. This may either be absorbed, which is the common result, or, as exceptionally occurs, the blood clot may break down and suppurate. On examining in these cases we find a tumor, usually intra-peritoneal, which occupies Douglas's fossa. It crowds the uterus forward, is not particularly sensitive to the touch, has a boggy feel and ill-defined outlines. It differs from the pelvic abscess by its quicker development, its being less sensitive, and, after the first day or two, by the absence of fever. Unless there is demand for active interference it should be left entirely alone. In the majority of cases the blood will become absorbed in the course of a few weeks. Even a large amount will be disposed of in this way. Rest should be enjoined, particularly at the time of menstruation, and the patient's general health looked after in every possible way. Should suppuration occur, which will make itself known by pain and fever, it should be opened and drained in the manner described when speaking of pelvic abscess.

## CHAPTER XX.

### DISEASES OF THE URINARY ORGANS.

THE urinary organs, from their situation in the pelvis, from the intimate connection of their blood and nerve supply with the organs of generation, and from their close association clinically, may properly be included in a work of this kind.

*Anatomy.* The urethra is a canal which measures about one and a-half inches in length. It lies directly above the anterior vaginal wall. The mucous membrane with which it is lined is covered with pavement epithelium, and there are glands which are more numerous at the lower part. It opens into the bladder at the so-called neck.

The bladder is a hollow organ lying in front of the uterus. The lower part, which is contiguous to the vagina, is the base. The trigone is a triangular space bounded by the openings of the ureters and of the urethra. The bladder has three coats, a mucous, a muscular, and over a portion of its surface a peritoneal. A thickening of the circular fibres which surround the upper end of the urethra is called the sphincter vesicæ.

There are two complaints with reference to the urinary apparatus which patients are apt to make: one with regard to the frequency of micturition; second, pain. As regards the frequency, this varies naturally

within normal limits, and is to a certain degree a question of habit. In the same individual the frequency will vary according to external conditions, with the heat or cold, with nervousness, which is frequently accompanied by an oversecretion of urine, and consequently a more frequent call to urinate. It is not always easy to define where a frequency becomes pathological, but if the desire comes every hour or two; if the quantity is small, and the patient cannot go beyond this short time without suffering, we may consider that there is an abnormal frequency. It is of importance in making a diagnosis of the cause of this difficulty to inquire whether the frequency is of the day alone, or of both the day and night. Where it shows itself only when the patient is on her feet, it suggests some mechanical interference with the distention of the bladder, or pressure from above by some unusual weight. If it occurs at night as well, it points to an irritability of some part of the urinary apparatus, or an abnormally small bladder. If this frequency is accompanied with pain, there is additional reason for judging that there is some disturbance of either bladder or urethra.

Painful micturition is a very common complaint with women. It may be temporary, in which case it is usually the result of cold or general pelvic congestion. This in itself is of relatively little importance, and usually yields readily to simple remedies. Where the pain has persisted for a long time, and is severe in its character, it is of the first importance in seeking to find the cause, to know the time of its occurrence with reference to the act of micturition. Thus it may either

precede the act, be more marked at the beginning of the flow, or during, or at the end, and each of these variations in time has its peculiar significance and value. If pain precedes the act it means that the distension of the bladder by the relatively small amount of urine is a source of pain. This is the case in cystitis, where the stretching of the inflamed mucous membrane is painful. Again, pain which occurs before the act of micturition may be caused by an irritation at the neck of the bladder. As the urine distends the bladder it slightly opens the neck, and when it touches the inflamed spot there is both pain and an immediate desire to pass urine. This latter may be so severe that the patient will be unable to hold the water. If pain is felt at the very beginning of the flow of urine, it means either that the relaxation of the sphincter to allow the urine to pass into the urethra is accompanied with pain, or that the urethra itself, especially at or near the sphincter vesicæ, is inflamed. Where this is the case, or where we have a general inflammation of the urethra, as in urethritis, the pain is severest at the beginning of the act, but diminishes as the stream of water continues to flow. Pain coming on just as the urine passes out of the urethra usually means trouble at the meatus. This may be a caruncle, or prolapsed urethral mucous membrane, exceptionally a polypus. Pain that occurs at the end of the act is usually one of two varieties; it is either a spasm of the neck of the bladder due to the shutting off of the stream, or is the result of the passage of the few last drops of urine over an inflamed vulva.

*Functional diseases.* There are various functional disturbances of these organs ; one of these is frequency of micturition due to hysteria or nervousness. We may have painful micturition due to a sensitiveness of the nerves of the bladder associated with a generally debilitated condition of the nervous system, without there being any pathological change in either bladder or urethra. It seems to be a neurosis and should be treated as such. Again, we may have difficulty of micturition due to an abnormal state of the urine ; thus a too acid or a too alkaline urine may cause irritation, or a too diluted or too concentrated one. In order to determine the existence of these conditions the urine must be carefully analyzed both quantitatively and qualitatively. If there is no abnormal condition of the urine found, we must regard the condition as a nerve symptom, and treat it on the broad principles of building up the system generally. If the urine shows changes, these should be treated with appropriate drugs and diet. If the urine is too acid, alkalies should be given, of which, perhaps, the best are potash salts. Should it be too alkaline benzoate of ammonia in five-grain doses at frequent intervals is of great value. If the urine is too concentrated, the patient should be directed to drink larger quantities of water, preferably hot.

Incontinence of urine is a comparatively frequent trouble with women. The most common cause is a lack of support for the bladder, and a sagging of the anterior vaginal wall as a result of a ruptured perineum. After a time, especially in older women, the sphincter



of the bladder loses its tone, and on slight coughing, straining, or jarring, a little urine will escape. This is an exceedingly annoying difficulty. Occasionally incontinence is associated with a generally weak condition of the whole system. It also appears where the bladder has become over-distended and there is consequently a leaking away of small amounts. The mistake should be guarded against of accepting incontinence of urine as proof that the bladder is empty, and the catheter should be passed to be sure of its condition. Of course, the incontinence due to a ruptured perineum is to be remedied by operation. Other forms may be treated by electricity applied to the neck of the bladder, and by general tonics, also by appropriate gymnastic exercises.

*Organic diseases.* Urethritis, or inflammation of the urethra, is in a majority of cases due to gonorrhœa. It is apt to come on within a few days after the disease has made its appearance in the vagina. When present it adds to the probability of the vaginitis being specific. It shows itself by a slight burning on passing water which, though slight at first, gradually becomes more severe. There is a little increased moisture at the mouth of the urethra which, at first opaque, gradually becomes more yellow, thicker, and creamy, as the disease progresses. The existence of a urethritis, aside from these symptoms, can be made out by examination. On separating the lips of the vulva, the mouth of the urethra is usually found bathed in pus. In order to be sure that this does not come from the vagina it should be wiped clean with

the cotton-stick, and the finger should then be passed into the vagina, and drawn forwards against the urethra, thus stripping it and forcing any secretions that may be in it towards the meatus. If by this procedure a drop of pus appears, it is proof of an inflammation of that canal. Urethritis rarely becomes chronic. The canal is short, is washed freely by the urine several times a day, and even when of gonorrhœal origin it yields quickly to treatment. Treatment may be made either through the urine, or by means of topical applications. The urine may be rendered bland and largely diluted with hot drinks. All alcohol and highly spiced food should be avoided. Sandal wood oil and copaiba may be used, though they are not as valuable as in urethritis of men. Should the affection prove stubborn, and tend to become chronic, it will usually very quickly yield to a few applications of nitrate of silver, from two to five grains to the ounce. This may be applied through the urethral speculum by means of the applicator wrapped in cotton dipped in the solution.

An exceedingly annoying trouble which we occasionally meet with, is fissure of the neck of the bladder. This is analogous to fissure of the anus, and consists in a more or less deep cut longitudinally through the membrane overlying the sphincter. It causes pain when the neck of the bladder dilates and the urine passes out. The exceedingly sensitive base being touched by the urine causes a spasmodic contraction of the muscle. On examination with the endoscope we see on one part of the neck of the bladder a

straight fissure of a deep red color, angry looking at the bottom and which may occasionally bleed.

The treatment of this condition is by forcible dilatation. This should be done with graduated dilators, and if an instrument as large as can be passed through the external meatus is employed it will often be sufficient to relieve the trouble.

*Cystitis.* Cystitis is inflammation of the bladder. Its causes are various. Perhaps the most common is an extension of the inflammation from the urethra to the bladder itself. Or it may be set up by the introduction of infectious material from outside by means of the catheter. It occurs as a complication of cystocele, in the aggravated cases where the bladder cannot empty itself, and there is residual urine which becomes alkaline. Exposure to cold seems sometimes to cause a mild cystitis.

*Symptoms.* The symptoms of cystitis are pain more or less constant over the region of the bladder, increased as the bladder fills, and very severe if it is at all over-distended. As a result of the sensitiveness we have a frequent desire to pass water, with no feeling of relief after the act. The urine at first is acid, but it soon becomes alkaline, and examination shows it to contain mucus, pus, blood, and epithelial elements. In severe cases it may become ammoniacal and exceedingly offensive.

*Diagnosis.* The diagnosis is made by examination of the urine, which is found to have those changes in its composition which are characteristic of cystitis. The vaginal examination will reveal in severe cases a sensitiveness of the bladder to pressure. Most satisfactory, however, will be the direct examination of the

FIG. 155.



Kelly's Cystoscope.

bladder itself by means of the cystoscope. This procedure has within a few years been thoroughly perfected, both abroad and in this country, especially by Dr. Howard A. Kelly, of Johns Hopkins. With the patient in an exaggerated lithotomy position, or in the knee-chest position, the urethra may be dilated with small tubes of varying size (Fig. 155), through which air will enter the bladder and dilate it, and by means of the head mirror the whole surface of the bladder can be inspected, the openings of the ureters can be seen, and they can be catheterized almost to the pelvis of the kidney; the secretions of the different kidneys may be collected separately and in this way the actual condition of these organs known. This instrument is of greatest aid in all bladder diseases, inasmuch as the actual condition of the whole bladder membrane can be seen.

*Treatment.* A good deal of what has been said in regard to urethritis will apply here. In the acute stage rest in bed is imperative, the diet should be bland, and the urine should be rendered non-irritating with either alkalies or other drugs according to the condition of the urine. Unfortunately cystitis tends to become chronic and is one of the most persistent and obstinate diseases which we have to treat. In the chronic form it is usually necessary to employ local measures. One of these is washing out the bladder. This is done by inserting a catheter into the bladder to which is attached a receptacle in which plain or medicated water may be put, being sure that the tube is filled so that no air will enter the blad-

der ; it is then raised sufficiently to allow a slow, gentle stream of water to flow. As soon as it begins to cause pain, the receptacle should be lowered, and the bladder allowed to empty itself. This may be repeated several times, thus washing the bladder thoroughly. For bladder irrigation we may use either plain water, or a salt of borax solution, two drachms to the pint, sulphate of zinc, acetate of lead or tannic acid, two grains to the ounce. Sometimes these mild solutions will not prove successful, in which case nitrate of silver may be used either in the form of an irrigation of mild strength, such as five to ten grains to the pint, or applications of a stronger solution may be made directly to the inflamed mucous membrane through the speculum. Where these measures fail we may, as a last resort, perform vaginal cystotomy. This is done by making a permanent opening in the bladder through the anterior wall of the vagina, and preventing its closing by suturing the edge all around, thus allowing the urine to escape directly as it enters the bladder. The object is to give the bladder a complete rest. The dribbling of urine is so annoying to the patient, and involves such constant care, that it is only justifiable as an extreme measure. It is usually necessary that the opening be allowed to exist for some months, or until by direct inspection the bladder membrane has been found to be healthy. The same result has sometimes been sought by the use of a self-retaining catheter, but the very presence of the catheter as a foreign body is in itself a source of irritation.

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